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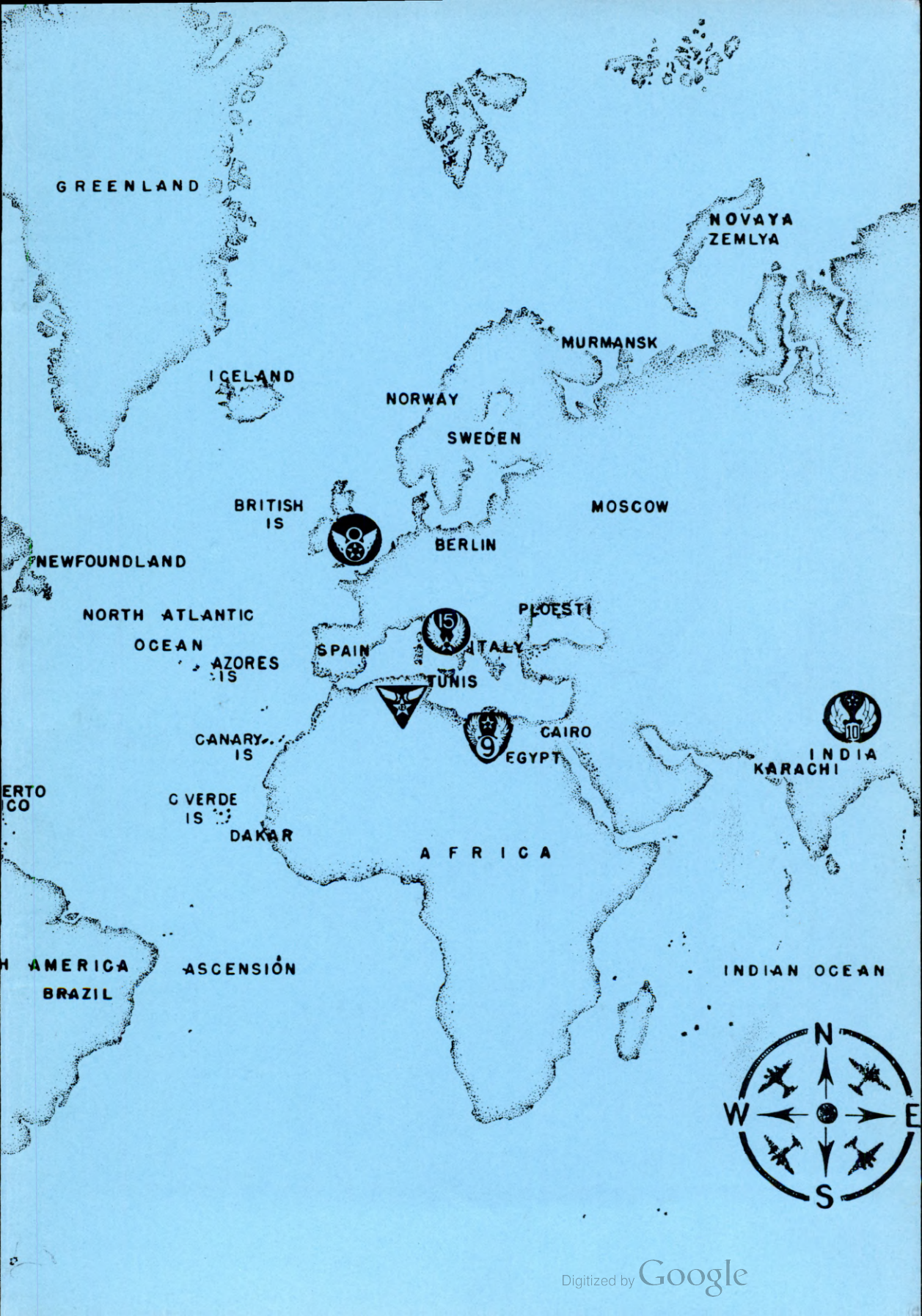

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Volume Five

THE PACIFIC: MATTERHORN TO NAGASAKI

JUNE 1944 TO AUGUST 1945

THE ARMY AIR FORCES

In World War II

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New Imprint by the
Office of Air Force History
Washington, D.C., 1983

**For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402**

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THE UNIVERSITY OF CHICAGO PRESS, CHICAGO 37

Cambridge University Press, London, N.W. 1, England

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Library of Congress Cataloging in Publication Data
Main entry under title:

The Army Air Forces in World War II.

Vol. 1 originally prepared by the Office of Air Force History; v. 2, by the Air Historical Group; and v. 3–7, by the USAF Historical Division.

Reprint. Originally published: Chicago: University of Chicago Press, 1948–1958.

Includes bibliographical references and indexes.

Contents: v. 1. Plans and early operations, January 1939 to August 1942—v. 2. Europe, torch to point-blank, August 1942 to December 1943—[etc.]—v. 7. Services around the world.

1. World War, 1939–1945—Aerial operations, American. 2. United States. Army Air Forces—History—World War, 1939–1945. I. Craven, Wesley Frank, 1905– . II. Cate, James Lea, 1899– . III. United States. Air Force. Office of Air Force History. IV. United States. Air Force. Air Historical Group. V. United States. USAF Historical Division.
D790.A89 1983 940.54'4973 83–17288
ISBN O–912799–03–X (v. 1)

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FOREWORD to the New Imprint

Deposit 25 May 84

IN March 1942, President Franklin D. Roosevelt wrote to the Director of the Bureau of the Budget ordering each war agency to prepare "an accurate and objective account" of that agency's war experience. Soon after, the Army Air Forces began hiring professional historians so that its history could, in the words of Brigadier General Laurence Kuter, "be recorded while it is hot and that personnel be selected and an agency set up for a clear historian's job without axe to grind or defense to prepare." An Historical Division was established in Headquarters Army Air Forces under Air Intelligence, in September 1942, and the modern Air Force historical program began.

With the end of the war, Headquarters approved a plan for writing and publishing a seven-volume history. In December 1945, Lieutenant General Ira C. Eaker, Deputy Commander of Army Air Forces, asked the Chancellor of the University of Chicago to "assume the responsibility for the publication" of the history, stressing that it must "meet the highest academic standards." Lieutenant Colonel Wesley Frank Craven of New York University and Major James Lea Cate of the University of Chicago, both of whom had been assigned to the historical program, were selected to be editors of the volumes. Between 1948 and 1958 seven were published. With publication of the last, the editors wrote that the Air Force had "fulfilled in letter and spirit" the promise of access to documents and complete freedom of historical interpretation. Like all history, *The Army Air Forces in World War II* reflects the era when it was conceived, researched, and written. The strategic bombing campaigns received the primary emphasis, not only because of a widely-shared belief in bombardment's con-

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tribution to victory, but also because of its importance in establishing the United States Air Force as a military service independent of the Army. The huge investment of men and machines and the effectiveness of the combined Anglo-American bomber offensive against Germany had not been subjected to the critical scrutiny they have since received. Nor, given the personalities involved and the immediacy of the events, did the authors question some of the command arrangements. In the tactical area, to give another example, the authors did not doubt the effect of aerial interdiction on both the German withdrawal from Sicily and the allied landings at Anzio.

Editors Craven and Cate insisted that the volumes present the war through the eyes of the major commanders, and be based on information available to them as important decisions were made. At the time, secrecy still shrouded the Allied code-breaking effort. While the link between decoded message traffic and combat action occasionally emerges from these pages, the authors lacked the knowledge to portray adequately the intelligence aspects of many operations, such as the interdiction in 1943 of Axis supply lines to Tunisia and the systematic bombardment, beginning in 1944, of the German oil industry.

All historical works a generation old suffer such limitations. New information and altered perspective inevitably change the emphasis of an historical account. Some accounts in these volumes have been superseded by subsequent research and other portions will be superseded in the future. However, these books met the highest of contemporary professional standards of quality and comprehensiveness. They contain information and experience that are of great value to the Air Force today and to the public. Together they are the only comprehensive discussion of Army Air Forces activity in the largest air war this nation has ever waged. Until we summon the resources to take a fresh, comprehensive look at the Army Air Forces' experience in World War II, these seven volumes will continue to serve us as well for the next quarter century as they have for the last.

RICHARD H. KOHN
Chief, Office of Air Force History

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FOREWORD

* * * * * * * * * * *

WITH the publication of this fifth volume of *The Army Air Forces in World War II* the narrative of AAF combat operations is completed. The plan of the series will be familiar to those readers who have followed the story in earlier volumes; for others it may be helpful to place the present study in the context of the whole series. Volume I carried the story of the AAF, both at home and abroad, through the first critical months of the war to the latter part of 1942, when it could be said that the Allied forces had seized the initiative in accordance with agreed-upon strategy. That strategy rested upon the assumption that there were in fact two wars, at least to the extent of permitting the war against the European Axis to be assigned a priority over that with Japan, and this assumption has been taken by the editors as warrant enough for a separate treatment of AAF operations in Europe and against Japan after the summer of 1942. In Volumes II and III the narrative of combat operations against the European Axis was carried forward from the beginning of Eighth Air Force bombing operations in August 1942 to the final collapse of Germany. In Volumes I and IV the fortunes of the AAF in the Pacific and CBI were followed from the initial attack on Pearl Harbor to the summer of 1944. Taking up the story at that point, the present study provides a narrative of combat operations against Japan to the final victory in August 1945. The two remaining volumes in the series will be devoted to the home front and to services, like that of the Air Transport Command, which do not readily fit into a discussion bound by theater limits.

At the close of Volume IV, MacArthur's forces had advanced along the northern coast of New Guinea to Sansapor and Admiral Nimitz' central Pacific forces had recently seized the Marianas, where engineers promptly undertook the development of airfields for use by the B-29's. A large part of the present volume, as would be expected, is devoted to the strategic air offensive against Japan, an

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offensive opened by XX Bomber Command from Chinese bases on 15 June 1944 and continued with mounting fury after November by XXI Bomber Command from bases in the Marianas. But that offensive, like the Combined Bomber Offensive against Germany, was considered officially as no more than an adjunct to other plans for the defeat of Japan, and it may be well to consider first the development of those other plans.

At the time of the launching of the B-29 offensive no final plan for the defeat of Japan had taken shape. Proponents of a strategy that would advance MacArthur's forces (mainly Army) northward from New Guinea by way of the Philippines toward Japan continued to press vigorously for a decision that would concentrate U.S. resources upon this line of attack; no less vigorous were the advocates of a strategy that would concentrate on a drive, under the leadership of Admiral Nimitz, for the establishment of air and sea bases on the China coast as a preliminary to the final assault on the home islands. By the summer of 1944 the debate was an old one and had been resolved only to the extent of an agreement by the Joint Chiefs that for the time being there was some advantage in keeping Japanese forces under the pressure of a double attack. In a directive of 12 March 1944 MacArthur had been instructed to continue with operations necessary to support of an invasion by Nimitz of the Palaus on 15 September and to land with his own forces on Mindanao in the southern Philippines on 15 November. Depending upon subsequent decisions, Nimitz would occupy Formosa on 15 February 1945 or MacArthur would land on Luzon in a move preliminary to a delayed attack on Formosa. The Joint Chiefs again postponed a final decision when on 8 September 1944 they approved plans for the seizure of Leyte in the following December.

Meantime, plans had been laid by MacArthur for the capture of Morotai in the Moluccas as a stepping stone on the way to Mindanao and Leyte, the timing of the operation to coincide with Nimitz' invasion of the Palaus in order that a double advantage might be taken of available naval cover. Kenney's Far East Air Forces, which since 15 June had combined the Fifth and Thirteenth Air Forces, reciprocated by collaborating with the Seventh Air Force, which until the summer of 1945 would continue to operate as a subordinate unit of Nimitz' central Pacific command, in pre-invasion bombardment preparatory to both landing operations. The landings were accomplished

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on schedule at Morotai and Peleliu, and engineers followed hard upon the assault forces to make ready the airfields which gave to the islands their strategic significance.

Such a sequence long since had become a familiar feature of island-hopping operations in the Pacific, but the engineers on this occasion approached their tasks with an unusual sense of urgency. Admiral Halsey, commanding the U.S. Third Fleet in pre-invasion strikes, had picked up intelligence indicating that Leyte contained no Japanese forces. Moreover, the reaction to his attacks argued a general weakness of the enemy throughout the Philippines. On Halsey's initiative, therefore, it had been decided to cancel a projected occupation by Nimitz of Yap and to jump MacArthur's front forward in one leap from Morotai to Leyte, with a target date of 20 October. The decision was one of the major gambles of the war. Even with the most rapid development of air facilities on Morotai, Leyte would remain beyond the range of effective cover by Kenney's air forces, still based on New Guinea. The plan of the Leyte operation thus violated one of the cardinal principles of SWPA strategy: to keep each forward move within the reach of land-based air forces. But Halsey's estimate of the enemy's weakness in the Philippines was not out of line with SWPA assumptions that the Japanese air forces were in a state of near-collapse, and powerful units of the Navy's carrier forces promised protection during the interval before Kenney could get his air garrisons forward. The gamble seemed to be one worth taking.

And so it was, as events proved. Yet, the risk was also proved to have been greater even than that anticipated. The report that there were no Japanese forces on Leyte was wrong; actually the veteran 16th Division was stationed there. Other intelligence regarding Leyte, intelligence affecting plans for airfield development and the build-up of an air garrison, turned out to be misleading. The enemy, correctly anticipating the general plan of U.S. leaders, was engaged in strengthening his position throughout the Philippines. It was true enough that Japanese air strength was on the point of collapse, as the desperate tactics of *kamikaze* attacks soon made abundantly clear, but remaining resources could be and were concentrated on the Philippines to an extent that dangerously belied Allied estimates of the situation. A plan to concentrate Japanese naval forces for all-out resistance to an Allied invasion of the Philippines rested upon the hope that U.S. carriers might be decoyed away from the beachhead to permit its

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destruction by the main force. And the American naval forces which carried the responsibility for protecting the beachhead also carried orders, thoroughly consistent with naval doctrine, that an "opportunity for destruction of major portions of the enemy fleet" would become "the primary task."

The landings on Leyte were easily made. A now extended experience with pre-invasion bombardment by Allied naval and air forces had persuaded the enemy to adopt the tactic of withdrawing from the beaches for concentration in the interior, and Allied air operations for isolation of the battle area had been effective enough to limit interference by enemy air to sporadic though vicious attacks. During the weeks preceding the invasion, FEAF planes ranged widely over the area south of Leyte and, beginning ten days in advance of the landing, Halsey's Task Force 38 once more gave an impressive demonstration of the carrier's power in destructive sweeps of the Ryukyus, Formosa, and Luzon. Despite the sweeps of Task Force 38, assisted by 302 B-29 sorties against a few selected air installations on Formosa, the enemy was able to begin moving air reinforcements into Formosa and Luzon almost as the carriers withdrew. And when the naval engagements with the Japanese fleet on 24 and 25 October drew off the protecting forces at Leyte, enemy air units were in position to punish the beachhead severely on the afternoon of the 24th and to follow through the next morning with no less than sixteen attacks upon the airfield seized by U.S. assault troops on the day of their first landing. The courage and daring of U.S. fleet units, coupled with blunders by the enemy, saved the beachhead from the intended assault by the main body of the Japanese fleet, but escort carriers in Leyte waters had spent themselves in desperate fleet actions, and Halsey's fast carriers, which had been decoyed far to the north, now had to be withdrawn for replenishment. The last of the fast carrier groups departed on the 29th, almost a week before FEAF planes were scheduled to take over responsibility for air defense of the beachhead.

Kenney reacted promptly to emergency demands for help. Though recently captured Morotai, nearest of his bases, as yet possessed facilities hardly equal to the requirements of a single bombardment squadron, he crowded substantial reinforcements onto the island. Attempts to attack enemy fleet units completely miscarried, but on Leyte ground crews which had been sent ahead of their planes labored night and day (and under repeated air attacks) with the engineers to lay the

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steel matting that permitted a force of thirty-four P-38's to move in as the initial air garrison on 27 October. The Navy having indicated its inability to fulfill its original mission of air defense, the job was promptly given to Kenney. Anxious days remained. Jammed together on a single strip with no provision for dispersal yet possible, the P-38's constituted an inviting target for enemy attack. Between 27 October and 31 December the enemy sent more than a thousand sorties against Leyte. The American defense force, which by December included Marine air units, proved itself superior to the enemy, and losses in combat were relatively small. But most planes continued to be based on Tacloban, the original field, where damaged aircraft were pushed into the sea to make room for reinforcements. All Philippine targets had been cleared for FEAF attack on 27 October, with instructions to the Navy to coordinate with FEAF before attacking. With both heavy bombardment groups of the Thirteenth Air Force brought forward to Morotai by mid-November, FEAF attacks on Philippine airfields began to count. Halsey's carriers were back by 5 November for heavy blows, and from its base in the Palaus the Seventh Air Force's 494th Group added weight to the attack. But the enemy had developed new skills in dispersal, and only with mid-November could it be said that U.S. forces asserted a telling superiority in the air. Meanwhile, the enemy had reinforced his ground troops on Leyte by 22,000 men within the first two weeks after the U.S. landing, and other thousands would follow, though at times without getting their equipment ashore. The evidence indicates that some 19,000 enemy troops were on Leyte at the time of our landing. At the close of land operations on Leyte in May 1945, totals showed some 56,000 enemy troops killed or captured.

The entire Leyte operation is extremely complex and at many points debatable. For so long as men study military history, the operation will retain a special fascination of its own. The editors of this volume have gone into some detail here, not so much because of a desire to enter into a debate as because of the belief that the experience at Leyte, in reverse so to speak, lends a special emphasis to the principles on which air operations had been successfully coordinated with the advance of ground and naval forces in the southwest Pacific. Those principles were grounded upon the assumption that air forces must first be in a position to assert and *maintain* superiority in the area of battle. It had been repeatedly recognized, as at Hollandia in

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New Guinea, that carrier-based air power could extend the reach of amphibious operations and safely so, provided land-based air power was in a position to take over promptly the primary responsibility. The advantage belonging to land-based air power obviously was its staying power: the capacity to stay there and fight it out for whatever term might be necessary to maintain air superiority and to do this without reference to any other competing obligation.

Fortunately, the U.S. command, given time, had more than enough resources to make good the gamble at Leyte. Fortunately, too, leaders showed a continued willingness to gamble on the declining power of the enemy by adhering to a stepped-up timetable of operations. The Joint Chiefs in October finally had resolved the question of an intermediate strategic objective by agreeing that MacArthur should advance by way of Mindoro to Luzon on 20 December and stand ready to support Nimitz in a later occupation of Okinawa, which at Nimitz' suggestion had been chosen in lieu of Formosa. Mindoro, which was to serve as an advanced air base for cover of the landings at Luzon, was scheduled for 5 December. Disappointing delays in the development of airfields on Leyte threatened the plan, for without a greatly increased capacity there Kenney would be unable to cover Luzon for the Mindoro operation. Happily, a rescheduling of Mindoro for 15 December and postponement of Luzon to 9 January 1945 made it possible for Halsey's carriers to cover Luzon while FEAF concentrated on the southern Philippines and protected the convoy en route to Mindoro. The convoys had a rough time of it, even though Kenney had stripped Leyte of air defense to provide a cover; but the schedule was kept and, with the protection of Mindoro-based planes and the assistance once more of the carriers, MacArthur reached the Lingayen beaches on time.

In the rapid development of the Philippine campaign, during which U.S. forces not only overran Luzon but in a series of brilliantly executed operations retook the whole of the Philippine archipelago by the summer of 1945, AAF forces demonstrated an extraordinary versatility both in the fulfillment of primary responsibilities and in the support of other services. As expanding facilities on Morotai and Mindoro and the capture of airfields in the Philippines made possible the forward staging of FEAF strength, Kenney's "boys" gave repeated demonstration of the full meaning of air supremacy. If the relative ease with which they asserted and maintained that supremacy

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bespoke the advantage gained from an earlier victory over the enemy air forces in the battles of New Guinea and the Solomons, the fact takes nothing from the evidence of skills which had been well developed. Only in the direct support of ground troops in a land campaign of the magnitude developed on Luzon did AAF crews face a task for which they had limited experience, and even here their support more than met the test of battle.

In the Philippines, as earlier in New Guinea, AAF planes struck ahead of land and amphibious forces to clear the way, protected convoys and other troop movements, delivered by air emergency supplies and paratroopers, kept enemy air beaten down on fields far and near, joined with naval forces to deny the enemy opportunity to reinforce his positions, maintained daily patterns of search covering thousands of miles for the intelligence of all services, and withal kept the flexibility necessary to meet emergency demands. In addition to commitments to the fighting in the Philippines, FEAF shared in the increasingly successful effort by U.S. submarines to cut the sea communications joining Japan to the southern parts of its Empire, found the reserve strength to assist the Australians in the reconquest of Borneo, and assumed responsibility for the neutralization of Formosa, a key enemy base that acquired special significance with the U.S. landing on Okinawa in April 1945. When *kamikaze* attacks seriously endangered U.S. naval forces supporting the Okinawa operation, some disagreement developed between naval and air leaders as to the source of these attacks. Having reason to believe that its pre-invasion bombardment of Formosa had reduced enemy air there to a state of impotency, FEAF argued that the attacks came from Kyushu, as postwar evidence indicates most of them did; the Navy suspected that most of them came from Formosa, as indeed perhaps 20 per cent of the attacks did. Though loath to waste any effort needed elsewhere, FEAF repeatedly stepped up its continuing operations against Formosa air installations in response to urgent appeals from the Navy. It was difficult, however, to cope with a well conceived program of dispersal that was implemented on a much larger scale and with far more determination than was at any time suspected by FEAF intelligence. And even had the intelligence been more accurate, it is doubtful that any of the conventional forms of air attack could have accomplished more than some reduction of the enemy effort. In retrospect, perhaps the *kamikaze* form of attack will serve chiefly to

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remind us that air supremacy can never be conceived of as an absolute.

When the war ended, AAF units flying from the hard-won bases of Okinawa had already brought Kyushu, southernmost of the enemy's home islands, under an attack preparatory to a scheduled amphibious landing in the following November. Earlier assumptions that the establishment of some lodgment on the Chinese mainland would be a necessary preliminary to the final assault on Japan had been abandoned. Difficulties arising from the question of command, which in the Pacific often had complicated the problem of agreement on strategy, had been resolved by a decision that MacArthur would command all Army, and Nimitz all naval, forces, with dependence upon the principle of cooperation in joint actions. FEAF, enlarged by the addition of the Seventh Air Force redeployed to Okinawa, continued to serve as MacArthur's air command. A new air command, the United States Army Strategic Air Forces in the Pacific (USASTAF), would control the Twentieth Air Force and the Eighth Air Force when redeployed from ETO to Okinawa.

The decision to mount the invasion of Japan from island bases without benefit of a lodgment on the east China coast meant that the war would end, as it had been waged throughout, with no real connection between the Pacific theaters and China-Burma-India. In the latter theater problems of strategy and command had been even more difficult of solution than in the Pacific, being rooted in the divergent interests of the three Allied nations and made bitter by the personal animosities of some leaders. China-Burma-India, lying at the extreme end of the supply line from America, was accorded a very low priority, and geographical factors within the theater made it difficult to use the bulk of the resources in combat: most of the tonnage available was spent merely in getting munitions to the various fronts. There were few U.S. ground forces in CBI, most of the troops being air or service forces whose mission was to see that a line of communication was preserved whereby China could be kept in the war.

The Tenth Air Force, having earlier protected the southern end of the Assam-Kunming air route that was long the only connection between China and U.S. supply bases in India, was committed in mid-1944 to a campaign in northern Burma whose dual objective was to open a trace for the Ledo Road into China and to secure bases for a

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more economical air route over the Hump. By that time Allied air forces, combined in the Eastern Air Command, had control of the skies over Burma; they helped isolate the strategic town of Myitkyina, supplied by airlift the ground forces conducting the siege, and rendered close support in the protracted battle that dragged on from May to August. After the fall of Myitkyina, the Tenth Air Force participated in the drive southward to Rangoon, a campaign that would seem to have borne little relation to the primary American mission. In both air support and air supply the Tenth showed skill and flexibility, but these operations absorbed resources that might have accomplished more significant results in China. After the Burma campaign EAC was dissolved in belated recognition of differing interests of the Americans and British, and at the end of the war the Tenth was moving into China to unite with the Fourteenth Air Force.

That force, ably commanded by Maj. Gen. Claire E. Chennault, had developed tactics so effective that its planes had been able to support Chinese ground forces and strike at shipping through advanced bases in east China while giving protection to the northern end of the Hump route. Chennault believed that if his force and the airlift upon which it depended could be built up, air power could play a decisive role in ejecting the Japanese from China. The promised build-up came too slowly. In the spring of 1944 the Japanese started a series of drives which gave them a land line of communication from north China to French Indo-China, a real need in view of the insecurity of their sea routes, and the drives in time isolated, then overran, the eastern airfields which had been the key to much of Chennault's success. In the emergency, a larger share of Hump tonnage was allocated to the Fourteenth and totals delivered at Kunming by ATC grew each month, dwarfing the tiny trickle of supplies that came over the Ledo Road. Chennault received too some additional combat units, but the time lag between allocation of resources and availability at the front was fatal. Different views of strategy and personal disagreements between Chennault and Chiang Kai-shek on the one side and Lt. Gen. Joseph W. Stilwell, the theater commander, on the other resulted in the relief of Stilwell and the division of CBI into two theaters, India-Burma and China, with Lt. Gen. Albert C. Wedemeyer commanding the latter. Heroic efforts by air, including mass movements of Chinese ground forces by plane, prevented the Japanese from overrunning all

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China. In the last months of the war the combined Fourteenth and Tenth Air Forces were preparing for a final offensive, but the surrender came before this could be developed.

The command system in CBI and logistical problems as well were made more complicated by the deployment in that theater of XX Bomber Command, an organization equipped with B-29 bombers and dedicated to a doctrine of strategic bombardment. The plane, an untried weapon rated as a very heavy bomber, had been developed during the expansion of the Air Corps that began in 1939, and its combat readiness in the spring of 1944 had been made possible only by the Air Staff's willingness to gamble on short-cuts in testing and procurement. The bomber command, which resembled in many respects an air force rather than a command, had also been put together in a hurry, and the mission in CBI was conceived both as a shakedown for plane and organization and as an attack on Japanese industry. Early plans had contemplated using the B-29 against Germany, but by the summer of 1943 thoughts had turned to its employment against Japan. The prospect that some time would elapse before appropriate bases in the Pacific could be seized plus the desire to bolster the flagging Chinese resistance to Japan, a need in which President Roosevelt had an active interest, led to a decision to base the first B-29 units in CBI. The plan looked forward also to VHB operations from the Marianas, where U.S. Marines landed on the same day that XX Bomber Command flew its first mission against Japan.

To insure flexible employment of a plane whose range might carry it beyond existing theater limits, the JCS established the Twentieth Air Force under their own control with Arnold as "executive agent." Theater commanders in whose areas B-29 units operated would be charged with logistical and administrative responsibilities, but operational control would remain in the Washington headquarters. This system of divided responsibilities found its severest test in CBI where the command system was already confused and where the dependence on air transport led to fierce competition for all supplies laid down in China.

Operational plans (MATTERHORN) for XX Bomber Command involved the use of permanent bases at Kharagpur near Calcutta and of staging fields near Chengtu in China, within B-29 radius of Kyushu and Manchuria but not of Honshu. Supplies for the missions were to be carried forward to Chengtu by the B-29's and by transport planes

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assigned to the command. Delays in the overseas movement of the B-29's and in airfield construction held up combat operations, the first regular mission being sent against Yawata on 15 June.

The earliest target directives gave precedence to the steel industry, to be attacked through bombing coke ovens. This target system was basic to the whole Japanese war effort and it had the tactical advantage of lying within range of the Chengtu bases. Little damage was done in Japan proper, but a few missions against Manchurian objectives were more effective than was then realized. From the beginning, operations were strictly limited by the difficulty of hauling supplies, especially fuel and bombs, to the forward bases. It was impossible for XX Bomber Command to support a sustained bombardment program by its own transport efforts, and the Japanese offensive in east China which began just before the B-29 missions prohibited any levy on normal theater resources. When the B-29's were assigned a secondary mission of indirect support of Pacific operations, logistical aid was furnished in the form of additional transport planes which were first operated by the command, then turned over to ATC in return for a flat guarantee of tonnage hauled to China.

Because support of Pacific operations was designed to prevent the enemy from reinforcing his air garrison during the invasion of the Philippines, XX Bomber Command shifted its attention to aircraft factories, repair shops, and staging bases in Formosa, and factories in Kyushu and Manchuria. This shift from steel, considered a long-term objective, to aircraft installations reflected recent decisions to speed up the war against Japan. Attacks against the newly designated targets, begun in October, were moderately successful, but a new Japanese drive lent urgency to the need for additional logistical support for ground and tactical air forces in China; consequently, at the request of General Wedemeyer, the command abandoned its Chengtu bases in mid-January 1945.

Earlier, the B-29's had run a number of training missions in southeast Asia and one strike, from a staging field that had been built in Ceylon, against the great oil refinery at Palembang in Sumatra; now the giant bombers continued with attacks against Burma, Thailand, Indo-China, and Malaya. Strategic targets, as defined by the Twentieth Air Force, were lacking, and though some important damage was done to the docks at Singapore, operations had taken on an air of anticlimax long before the last mission was staged on 30 March. At

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that time the command was in the midst of the last and most sweeping of a series of reorganizations: the 58th Bombardment Wing (VH), its only combat unit, was sent to Tinian where it became part of XXI Bomber Command, while the headquarters organization went to Okinawa to be absorbed by the Eighth Air Force.

Measured by its effects on the enemy's ability to wage war, the MATTERHORN venture was not a success. For want of a better base area it had been committed to a theater where it faced a fantastically difficult supply problem. Something of the difficulty had been realized in advance, but the AAF's fondness for the concept of a self-sufficient air task force had perhaps lent more optimism to the plan than it deserved. Certainly the desire to improve Chinese morale was a powerful argument, and here there may have been some success, though it would be difficult to prove. Powerful also was the desire of AAF Headquarters to use the B-29 for its intended purpose, very long-range attacks against the Japanese home islands, and in justice to that view it must be noted that the planners from the beginning expected to move the force to island bases when they were available, just as was done. As an experiment with a new and complex weapon, MATTERHORN served its purpose well: the plane was proved, not without many a trouble, under severest field conditions; tactics were modified and the organization of tactical units streamlined. The lessons learned were of great value to XXI Bomber Command, but the necessary shakedown might have been accomplished at less expense elsewhere, perhaps in the southwest Pacific. At any rate, the editors find no difficulty in agreeing with USSBS that logistical support afforded to XX Bomber Command in China would have produced more immediate results if allocated to the Fourteenth Air Force, though it seems dubious that the alternate policy would have made for an earlier victory over Japan.

In his remarkable fictional account of a future American-Japanese war, published in 1925,* Hector Bywater referred to a news dispatch describing

> American preparations to recover Guam by a sudden attack in overwhelming strength, this being but the first move in a great offensive campaign which was to be carried on with the utmost vigour until the Philippines were again in American hands. Further, it was hinted that the war would then be carried to the coasts of Japan proper, and allusions were made to the gigantic fleet of air-

* Hector Bywater, *The Great Pacific War: a History of the American Japanese Campaign of 1931–1933* (2d ed.; Boston, 1932), p. 244.

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craft which was building for the express purpose of laying waste to Tokyo and other great Japanese cities when the Americans had secured a base within striking distance.

Written two decades in advance, this proved to be an uncannily shrewd forecast of plans for the real war as they developed from the spring of 1944. First Saipan, then Tinian and Guam, were seized by Nimitz' forces for the primary purpose of serving as bases for VLR bombers, and while the Philippines were being secured, airfields were built in the Marianas and the bombardment of Japan was begun. Base development in the Marianas was delayed by the prolonged resistance of the Japanese garrisons, by competition for priorities with the Navy, and by fluctuations in deployment plans. However, minimum facilities were available to accommodate the 73d Bombardment Wing (VH) when its B-29's began to arrive at Isley Field on Saipan in October, and to receive each of the succeeding wings—the 313th (Tinian), 314th (Guam), 58th (Tinian), and 315th (Guam). The schedule was met only by the unprecedented device of basing each wing on a single field, all served by a depot field at Guam, which was also the site of the several headquarters connected with the B-29 project—XXI Bomber Command, AAFPOA, and after July 1945 the Twentieth Air Force and USASTAF.

Much of the credit for securing adequate priorities for B-29 building programs that frequently ran counter to Navy demands in a Navy theater is due Lt. Gen. Millard F. Harmon, who became commander of AAFPOA upon its activation on 1 August 1944. That headquarters was established primarily to centralize, under Nimitz, logistical and administrative responsibility for all AAF forces in the central Pacific. The maintenance and repair system for B-29's in the Marianas developed great efficiency, while supply problems never affected operations as seriously as they had in the CBI: the one major crisis was caused by a threatened shortage of incendiary bombs that actually failed to materialize. Harmon, as commander of Task Force 93, had operational control of all land-based planes in the theater, Navy and Marine as well as Seventh Air Force units reinforced by VLR fighter groups. As deputy commander of the Twentieth Air Force he was responsible for coordinating B-29 operations with other theater activities, and he himself was inclined to interpret that duty to mean virtual control of all B-29 operations. This interpretation Arnold's office refused to accept, maintaining its direct control over the com-

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manding general of XXI Bomber Command, to whom was accorded a considerable latitude in the fulfillment of directives. In July 1945, as a part of the general reorganization of U.S. forces in preparation for the invasion of Japan, a new headquarters, United States Army Strategic Air Forces, was established at Guam under Gen. Carl Spaatz, its constituent air forces being the Twentieth (formerly XXI Bomber Command) and the Eighth, now converting to a VHB organization in the Ryukyus.

The B-29 assault began on 24 November 1944 with a strike against Nakajima's Musashino aircraft plant at Tokyo, a target chosen according to current directives which gave precedence to aircraft engine and assembly plants in that order. For the next three and a half months most of the missions were directed against such targets, with Musashino and the even more important Mitsubishi complex at Nagoya bearing the brunt of the attacks. High-level precision tactics were used, but with cloudy weather generally prevailing bombing accuracy was not up to expectations; damage was in most cases negligible to moderate, but the threat of more effective attacks forced the Japanese into a badly planned dispersal program which materially reduced the output of engines and planes. Although in this period, as throughout the rest of the war, weather constituted the most serious obstacle to successful operations, some of the difficulties were those commonly associated with the breaking-in of a new air force under arduous combat conditions; it was a tribute to the leadership of first Brig. Gen. Haywood S. Hansell, Jr., then Maj. Gen. Curtis E. LeMay, that the period of adjustment was so brief.

Losses were relatively heavy, both those inflicted by recently reinforced defenses in Japan and the operational losses incident to the long overwater flight to Japan and return. The Japanese were also able to destroy some B-29's on the ground at Saipan by staging down through Iwo Jima in small raids that were annoying if not actually dangerous to the strategic campaign. Iwo Jima and its neighboring islands of the Nampo Shoto had been under attack since August by AAFPOA B-24's as a part of a general program of interdiction, but neither these attacks nor those occasionally delivered by B-29's and surface ships were sufficient to keep the air strips out of use. Iwo Jima, directly along the route to Honshu, was also a menace to B-29's in their missions northward, but in American hands the island could be developed into an emergency landing place, an advanced staging area,

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a base for VLR escort fighters, and an air-sea rescue station. These were the motives that led to the seizure of Iwo in a bitter struggle that began on 19 February and was finished only on 26 March. Preliminary bombardment by aircraft and surface ships failed to knock out the island's underground strongpoints, and the skilful and fanatical resistance of the enemy took heavy toll of the Marine invaders. The unexpectedly long struggle delayed the development of airfields, though one Japanese strip was rapidly overrun and rehabilitated for use of AAFPOA's fighters, which flew in to lend ground support to the Marines. Base development, still unfinished at the end of the war, turned the island into a complex of fighter and bomber strips. The fighters were used as escorts less frequently than had been expected, since waning enemy strength and a turn to night missions cut B-29 losses, but the fighters helped police the other Bonin Islands and made offensive sweeps over Japan. The use of Iwo as a staging base was less frequent than had been anticipated, also. As an emergency landing field, however, the island fully lived up to expectations; about 2,400 B-29's made unscheduled landings there and the crews saved thereby, and in the improved air-sea rescue service made possible by possession of Iwo, perhaps balanced the number of casualties suffered during its capture.

On 9 March XXI Bomber Command began a series of incendiary attacks against urban areas that profoundly changed the nature of the strategic bombardment campaign. In spite of a general bias in favor of precision techniques, Twentieth Air Force headquarters had from the first been interested in the possibilities of incendiary attacks against the crowded and inflammable cities of Japan, and a few staff members in Washington and in the field believed that such raids, conducted at night, would be far more destructive than conventional precision tactics. Early test raids were inconclusive (though a daylight incendiary raid on Hankow in China by Chengtu-based B-29's was highly successful), but under directives from Washington other attempts were made early in 1945 which afforded more positive evidence. The tactics finally adopted by LeMay involved low-level night attacks with a heavy concentration of incendiaries of mixed types. The low approach and the partial stripping of defensive armament allowed a great increase in bomb load, but those measures were considered by some as adding gravely to the danger from Japanese defenses. Fortunately the new tactics did not result in heavy losses, and

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offensively they proved extraordinarily successful. The first attack, against Tokyo, burned out 15.8 square miles of the city, killed 83,793 people, and injured 40,918, being perhaps the most scathing air attack of the whole war. In rapid succession Nagoya, Osaka, Kobe, and again Nagoya were hit in a ten-day fire blitz that destroyed over thirty-one square miles while the command was perfecting its new tactics.

The invasion of Okinawa on 1 April and the enemy's wholesale use thereafter of *kamikaze* attacks against the assaulting fleet interrupted the strategic bombardment campaign; for over a month the B-29's were sent against airfields in Kyushu, the source of most of the *kamikaze* attacks, in the only serious diversion to tactical operations suffered by XXI Bomber Command. That assignment completed, the Superforts returned to their primary task with a flexible program, the so-called "Empire Plan," in which the choice between daylight attacks on precision targets and radar or night bombing of urban areas was determined by the weather. In May and June, the six largest industrial cities were finished off as profitable targets and the attack then turned to medium-sized towns, of which fifty-eight were bombed with incendiaries. In all, counting the 2 hit by atom bombs, 66 cities suffered area attacks which burned out a total of 178 square miles. In the meantime, precision attacks against individual targets were scheduled for clear days. Targets were largely those which seemed to bear an immediate rather than a long-term effect on Japan's ability to resist: aircraft factories, oil refineries, arsenals, light metals works, and other industrial plants. In an effort to increase bomb loads and accuracy, the B-29's now went in at altitudes much lower than in the earlier daylight missions and this change in tactics paid off without any great increase in losses. In fact, during the last weeks of the war B-29 losses fell to a negligible rate. Air battles during the earlier campaigns had killed off the best of the Japanese pilots and replacements from an inadequate training program were no match for U.S. crews. Aircraft production had been seriously hurt by the B-29 attacks and although the Japanese still had thousands of planes, they tended to hoard these and their dwindling fuel stocks to use in *kamikaze* attacks against the anticipated invasion, so that they seldom rose in force to challenge the VHB formations. It was LeMay's belief that by driving his crews—relatively less plentiful than bombers and less easily replaced—he could force a surrender before the invasion was launched, and to that end he built up to a furious pace of operations

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that in time would have exhausted his flyers, but again his calculated risk paid off.

The B-29's participated in two types of operations that demanded specialized training and tactics. One was a campaign against oil refineries by the 315th Wing, equipped with an improved radar (AN/APQ-7) mounted in stripped-down B-29's. Bombing wholly at night, the wing achieved a remarkable degree of accuracy, destroying or heavily damaging Japan's ten largest petroleum or synthetic oil plants and much of the nation's storage capacity. These attacks began late in the war, on 26 June, and although successful in wiping out most of the enemy's refining potential, they were not particularly important as the blockade had long since created an excess of plant capacity. To that blockade the B-29's had contributed generously in a program of aerial mining begun late in March by the 313th Wing, which expended by V-J Day 12,053 x 2,000- and 1,000-pound mines. As Allied submarines and aircraft had cut off one convoy route after another, the importance of the relatively safe Inland Sea routes was enhanced. The chief target for the 313th Wing was the Shimonoseki Strait, through which 80 per cent of the Japanese merchant marine traffic passed. Other objectives included sealing off the ports in the Tokyo and Nagoya areas (no longer of prime importance), those within the Inland Sea, and the smaller harbors of the west that were in contact with Manchuria and Korea. The campaign had as twin objectives interdiction and attrition. It was impossible wholly to choke off traffic in the target areas, since the Japanese could usually open a passage within a few days after a mission by sweeping and sending through small suicide craft. But their countermeasures could not cope with the varied mine-types and tactics used, and by persistent reming the B-29's reduced materially the traffic in the designated waters. So desperate was the shipping situation that the Japanese were forced to take grave risks, so that after April the B-29's supplanted the submarine as chief killer in the war against merchant shipping, accounting during that time for about half the tonnage put out of action.

The shipping situation had become increasingly serious since 1944 as losses mounted and as the advance of the Allies allowed them to cut one convoy route after another. Through desperate efforts the Japanese had increased their over-all production which reached a peak a little after the middle of that year, but only by drawing on some stockpiled materials and by giving overriding priorities to munitions

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in immediate demand. Some Japanese officials and many of the intellectuals had become convinced that the fall of Saipan, with its obvious threat of aerial bombardment of the homeland, spelled eventual defeat; as the B-29 attacks gave reality to the threat, those persons began clandestine efforts to bring about a surrender. The loss of Saipan had brought about the fall of Tojo's militant government and while his successor Koiso attempted to spur the war effort, the peace movement gained quiet momentum during the latter's premiership. When the Allies invaded Okinawa, Koiso was ousted and the Emperor directed Suzuki to form a cabinet which should have the dual function of continuing the war effort while seeking appropriate means of bringing about peace, even if that meant accepting unfavorable terms. Suzuki set up a new organ of government, a small inner war council composed of the Premier, the Foreign, Navy, and War ministers, and the two military chiefs of staff. The first three in that list were for peace, the last three for a continuation of war until some Japanese victory would give a favorable position from which to engineer a negotiated peace. It was the task of the peace party to inform members of the government and of the circle of elder statesmen of Japan's desperate military situation, poorly understood by most, so that various factions among the ruling oligarchy should be convinced of the necessity of an early surrender. There was some thought of trying to negotiate through the Chinese government at Chungking; then, beginning in May, efforts were made to secure the services of the Soviets as mediators. These approaches, sanctioned by the Emperor, made little headway and when the Japanese ambassador became urgent in July, the Kremlin postponed any decision until after the imminent meeting of the Big Three at Potsdam.

Certain individuals in Washington, particularly Acting Secretary of State Joseph C. Grew and Secretary of War Henry L. Stimson, correctly diagnosed the situation in Japan and thought that that nation might be brought to surrender without an invasion if an increasing show of force could be accompanied by a public statement that the Allied demand for unconditional surrender did not contemplate the destruction of the Emperor or the Japanese nation. Others, impressed with the fanatical resistance of the Japanese at Iwo Jima and Okinawa and aware of the existence in Japan of a large and undefeated army, believed that an invasion in force would be necessary. If these latter leaders failed to appreciate conditions familiar to us all

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through postwar disclosures, it must be remembered in their favor that they were committed to winding up the war as soon as possible and that preparations for so large an invasion demanded an early decision on strategy. And so, in spite of a belief by many, particularly in the AAF and the Navy, that air attack and the blockade would force a surrender, the JCS in June set up an invasion of Kyushu for November and of Honshu for the following March. At Potsdam, this decision was confirmed by the CCS and the Soviets reiterated their earlier promise to enter the war against Japan in August. The clarification of war aims, which had been postponed for military purposes during the Okinawa campaign, was released on 26 July as the Potsdam Declaration, and disclosure by Stalin of Japan's recent peace efforts seemed to augur well for its success. The tightening of the blockade and the increasing tempo of the B-29 attacks, now grown so bold that leaflets were dropped in advance of attacks to warn cities of their impending doom, had in fact given impetus to the peace movement in Tokyo, but a recalcitrant clique of militarists objected to some of the Potsdam terms and in fear of a military coup Suzuki refused to treat on the basis of the declaration. His refusal, made public in a press interview of 28 July, gave no evidence of his continuing endeavors; it became, therefore, the signal for the United States to add a most terrible sanction to those already in force.

In 1939 the United States government had become interested in the possible military use of nuclear fission. In collaboration with some of our Allies, and through the teamwork of scientists, industry, and government, a vast project for the production of fissionable materials had been carried through to success and a bomb had been designed to derive from those materials unprecedented destructive power. The first test bomb had been exploded successfully at Alamogordo in New Mexico on 16 July, and it was the decision of President Truman and Stimson, his chief adviser in the matter, that the bomb should be used if the Japanese refused to accept the surrender terms. Since the previous autumn a specialized B-29 unit, the 509th Composite Group, had been in training to deliver the atom bomb, and the group was now at North Field, Tinian, awaiting the bomb and the required orders.

The orders, a facsimile of which is shown in the present volume,* were issued on 25 July; they authorized an attack, after 3 August, on

* See below, facing p. 696.

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one of the following cities which had previously been relatively immune to attack: Hiroshima, Kokura, Niigata, or Nagasaki. On 6 August, in an attack which was a model of tactical performance, the first bomb was dropped on Hiroshima. Exploding at a considerable altitude, the bomb caused tremendous damage by blast and by fires of immediate and secondary origin which, fanned by a heat-induced wind, destroyed 4.7 square miles in the heart of the city; minor damage was done to buildings as far as 15,000 feet from the center of impact though industries in the suburbs escaped without substantial hurt. Casualties were terrific, amounting according to the best estimates to between 70,000 and 80,000 dead and a like number wounded. The most prevalent cause of casualties was burns, with direct or indirect effects of blast coming second and the dreaded effects of radiation third, though many more persons undoubtedly would have suffered from radiation had they not been killed immediately by other causes. The attack brought about a complete breakdown in the civilian defense organization and relief activities were taken over by the Army, whose headquarters at Hiroshima had been one of the reasons for the choice of that city as a target.

The Army's top command tried to play down the importance of the attack and to restrict knowledge of the type of bomb used, though that information had been disclosed in a broadcast by President Truman and confirmed by Japanese scientists. The fact that the United States had so terrific a weapon and was prepared to use it gave added weight to the arguments of the peace party, though in protracted sessions of the inner council and the cabinet the extreme militarists continued to haggle over terms they had previously objected to—Allied trials for war criminals, the ambiguous position of the Emperor in postwar Japan, and the threat to the existing "national polity." Fear of a revolt of the radical element in the services, which included most of the Army officers and many junior Navy officers, still influenced some officials, and there was also much anxiety lest a surrender be followed by a Communist revolution.

On 9 August, while the debate continued, a B-29 dropped the second atom bomb on Nagasaki. The terrain of the city, divided by the hills and valleys of two converging valleys and a bay, prevented the wide and regular pattern of destruction that occurred at Hiroshima; within the bowl-shaped area hit, however, the surrounding hills tended to intensify the blast. Nagasaki was unusually well equipped with air-raid shelters, tunnels dug into the numerous hills

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where a few persons at work were saved from the bomb. The Army's censorship of candid news about Hiroshima prevented full use of those shelters, however, and casualties were again severe—including perhaps 40,000 dead and missing and 60,000 wounded. There was grim irony in the fact that Nagasaki had been the least preferred of the four target cities: Niigata had been scratched because of the distance involved; Kokura was the primary target on the 9th but was cloud-covered, and the drop at Nagasaki was possible only because of a last-minute break in the clouds just before the B-29 was prepared to turn back with the bomb.

With the threat of further atomic attacks and the news of Russia's declaration of war, Suzuki was able to break the deadlock in his cabinet, though only by securing the direct intervention of the Emperor. The surrender offer dispatched on 10 August was qualified by a clause intended to preserve the Emperor's life and position; momentary hesitation in Washington over the form rather than the substance of a reply delayed its transmittal, and there was more debate in Tokyo before the oblique rejoinder of the Americans was finally accepted by imperial mandate on 14 August. During the week of intensive debate in Tokyo the B-29's and other AAF and Navy planes had only momentarily interrupted their violent attacks on the home islands, but these ended as the Japanese with only sporadic exceptions obeyed the imperial cease-fire orders. The Emperor's broadcast to the nation on 15 August came as a surprise to most of the nation but there was no general protest to the news of the surrender and only a minor amount of difficulty from the Army radicals.

The surrender, coming without an invasion of the home islands, where the Japanese were still possessed of an undefeated and confident army of 2,000,000 and thousands of planes cached away for *kamikaze* service, made the war unique in American military annals. It is conventional to assign credit, as USSBS has done, to the combined efforts of all arms and services of the United States and its allies and the editors believe that the text of this volume fully substantiates that appraisal. Yet the role of the several services differed importantly from recent experiences in Europe and even more from that of earlier wars. Ground forces, whether Army or Marine, served principally to advance air and naval bases ever nearer the heart of Japan in a series of leapfrog hops. The forward movements, made usually by great armadas, required a decided and continuing air supremacy which the Allies gained as their offensive developed, first a local supremacy, then

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as heated air battles depleted the enemy's supply of first-line pilots and crews, an over-all supremacy. By the time U.S. bombers were emplaced within striking distance of the home islands, Japanese air power had been badly defeated; the turn to wholesale *kamikaze* tactics was a confession of that defeat and while such tactics could inflict annoying losses on an invasion fleet, they left mastery of the air to the Allies. Free to bomb Japanese factories and cities without serious challenge, the B-29's added to industrial shortages caused by the blockade, and with the planned intensification of operations from Okinawa would eventually have destroyed Japan's ability to resist. The blockade, enforced largely by submarines and aircraft, would also have been intensified. Whether air attack or blockade was the more important factor it seems impossible firmly to determine and, in last analysis, is immaterial. It was the combination that broke Japan's will to resist, both within the ruling factions and among the people as a whole, and if postwar studies have suggested that it was the blockade that first undermined Japan's war economy, available evidence seems to indicate that it was the direct air attack that most strongly affected the nation's morale. In any event, chiefly through air and sea power the Allies were able to achieve their political objective without an invasion. It was not the kind of quick decision the air theorists wrote about in the 1920's and 1930's, but once bases had been seized within range of Tokyo, the end came without undue delay. With all his exaggerations, Billy Mitchell had been right in predicting that the future lay with the airplane, the carrier, and the submarine rather than the battleship and the large army. Right, that is, for the Pacific war.

Though each of the authors contributing to this volume is identified in the Table of Contents, it may be helpful to mention here their several wartime assignments. James Lea Cate as a member of the AAF Historical Division devoted his attention to studies of strategic bombardment and served as historical officer of the Twentieth Air Force from the time of its activation to the end of the war. Frank Futrell served as historical officer with the Far East Air Forces, Lee Bowen with Eastern Air Command in India, Woodford A. Heflin with the CBI Air Service Command, Maj. Bernhardt L. Mortensen with V Bomber Command in the Southwest Pacific, and James C. Olson and James Taylor with Army Air Forces, Pacific Ocean Areas, in Hawaii and on Guam.

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Once more it is a pleasure to acknowledge the never failing aid rendered to the editors by Col. Wilfred J. Paul, Director of the Research Studies Institute, Air University, and Dr. Albert F. Simpson, Chief of the USAF Historical Division. Among the members of their staffs our chief indebtedness is to Mr. Joseph W. Angell and Lt. Col. Eldon W. Downs; their cooperative spirit has never failed, even in the face of unreasonable demands. Ernest S. Gohn and Robert F. Gleckner, by their careful checking of both manuscript and proof have done much to improve the accuracy and quality of the text. Mrs. Wilhelmine Burch, who was the editors' chief assistant during the preparation of the first four volumes, kindly consented to return to the project to help with the page proofs. Dr. Gohn has, in addition, prepared the index. Mr. Z. F. Shelton has done the maps. To others of the staffs of RSI and the Historical Division our obligation for many courtesies is heavy, especially to Miss Sara Venable, Mrs. Molly Keever, Mrs. Lois Lynn, and Mrs. Margie McCardel who handled the tedious and exacting task of typing the manuscript of the entire volume, and to Miss Marguerite K. Kennedy, Mr. Frank C. Myers, and the other members of the Archives Branch of the Historical Division who made available to the authors and editors the principal documents from which the book was written. Thanks also are due to Lt. Col. Ernest B. Stevenson, Lt. Col. Russell A. Bell, Maj. Thad S. Strange, Capt. George H. Saylor, Mrs. Juliette A. Hennessy, Dr. Edith C. Rodgers, Miss Ruth McKinnon, Mr. David Schoem, and Mrs. Frances Poole. In this volume, as in others in the series, the illustrations were made available through the courtesy of the Photographic Records and Services Division, Headquarters, USAF.

We are also glad to make special acknowledgment of the assistance provided by some of those who bore a heavy responsibility for the operations herein recorded. Gen. George C. Kenney has been kind enough to read that portion of the manuscript which covers air operations in the southwest Pacific and to offer helpful criticism. Lt. Gen. George E. Stratemeyer and Maj. Gen. Claire L. Chennault have readily submitted to interrogations which helped to clarify the complex problems of CBI. The Hon. Patrick J. Hurley, in addition to answering questions, has generously permitted the use of pertinent evidence from his personal files. Col. Cecil E. Combs, executive in the headquarters of the Twentieth Air Force, not only saw to it that the historical officer enjoyed an unqualified right of access to all files

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but repeatedly found the time to talk at length about the peculiar problems of a unique experiment in command. Lt. Gen. Laurence S. Kuter, ever an understanding friend of the historical office, has generously responded to requests for clarification of problems relating to AAF planning, for which he bore a primary responsibility throughout most of the war. In all instances, these officers have given their time generously and with no effort to force their own views upon the historian. The opinions expressed in the following pages are those of the authors.

In bringing to a close the discussions of AAF combat operations, the editors would like to express their special sense of indebtedness to the many historical officers whose contribution to this history has been recorded chiefly in the footnotes. The assignment must often have seemed a thankless task, nothing more than an additional duty of debatable utility, but to those of us who have been charged with straightening out the record of a significant experience in the history of the nation the assignment appears in an altogether different light. We would have liked in every instance to credit the author by name, but experience soon taught us that grave injustice might be done by such a practice, for, as is true of other military documents, the name appended to the document was not always the name of the man who did the work. And so it was decided that citations should be made only by the name of the organization, a decision which also promised to be of assistance to those who may wish to consult the fuller record provided in the archives of the Historical Division, where all of the AAF histories have been filed according to organization. To those of our friends whose responsibility for organizational histories is beyond question but whose work is cited without credit to the author, the editors offer their apologies and this explanation: there seemed to be no fair line that could be drawn between a policy crediting all authors or crediting none.

From the very beginning of the project AAF historians have enjoyed the helpful and cheerful cooperation of the Army's Historical Division. To Dr. Kent Roberts Greenfield and his colleagues again go thanks from us all.

WESLEY FRANK CRAVEN
JAMES LEA CATE

Princeton, New Jersey
November 8, 1952

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SECTION I

* * * * * * * * * * *

THE TWENTIETH AIR FORCE AND MATTERHORN

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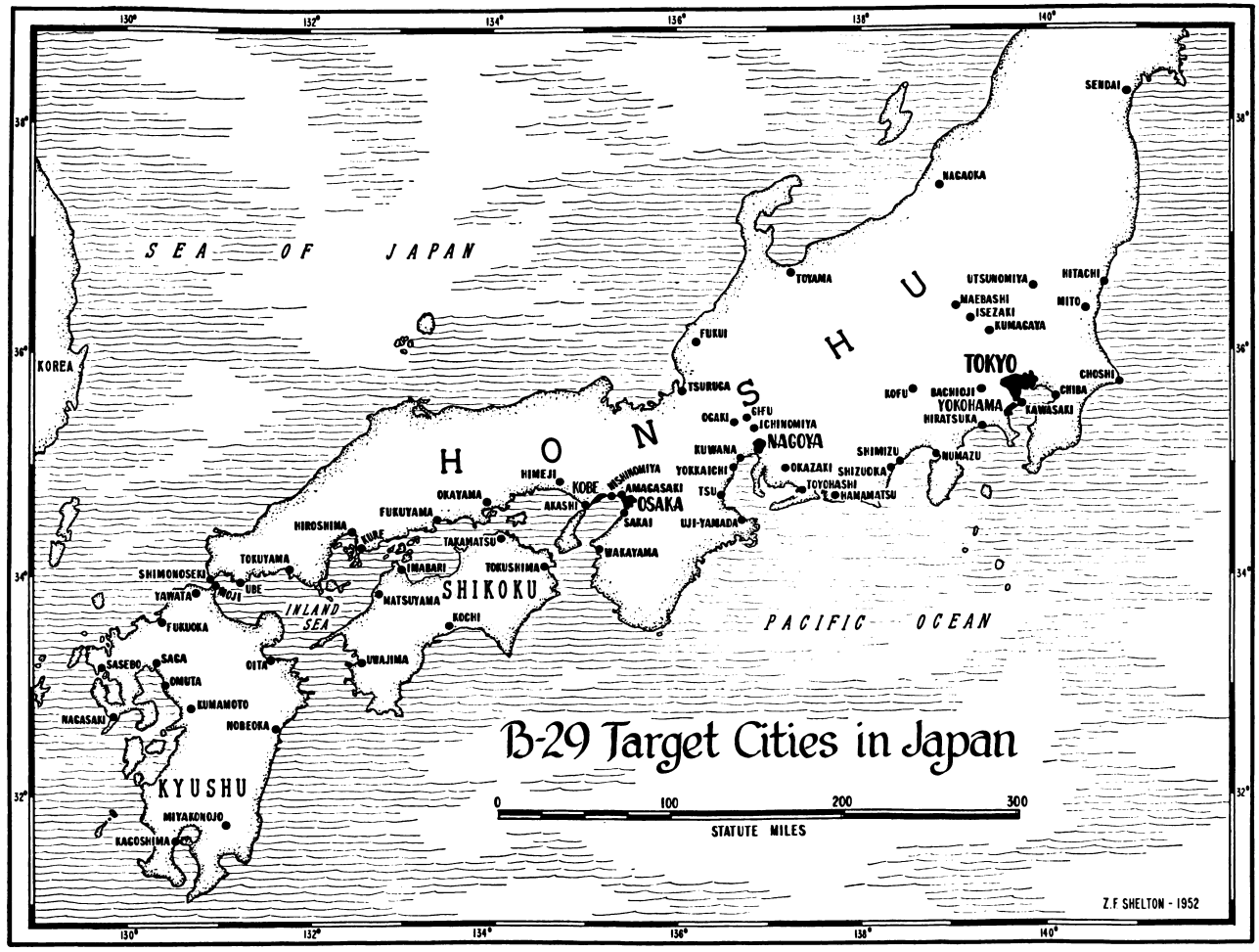

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CHAPTER 1

* * * * * * * * * * *

THE VLR PROJECT

ON 15 June 1944 a force of half-a-hundred B-29's of XX Bomber Command struck at the Imperial Iron and Steel Works at Yawata in Kyushu. On the same day the 2d and 4th Marine Divisions swarmed ashore at Saipan. The two attacks, widely separated in space, were synchronized for tactical reasons. They were connected too in a wider strategic sense, for together they signalized the inauguration of a new phase of the air war against Japan. The Yawata mission initiated a program of strategic bombardment against the Japanese Inner Zone from Chinese bases; the Saipan operation opened an assault on the Marianas which was to provide more effective bases for that program. In a press release on the following day Gen. George C. Marshall remarked that the B-29 attack had introduced "a new type of offensive" against Japan, thereby creating "a new problem in the application of military force."[1] For the new problem the Joint Chiefs of Staff (JCS) had evolved a new answer —the Twentieth Air Force, a Washington headquarters for a striking force based in India and staging through China to hit at Japan and for a second force subsequently to operate from the Marianas. All was new—weapon, bases, controlling agency.

Even the mission was novel in that area. In the ETO the Army Air Forces had thrown its most substantial efforts into a bomber offensive against the industrial sources of the Nazi war machine. As yet there had been no such effort in the war against Japan. Bombardment by the several Army air forces in the Pacific—the Fifth, the Thirteenth, the Seventh, and the Eleventh—had been almost exclusively tactical, directed against the enemy's air strips, at the shipping whereby he nourished his advanced forces, at his supply dumps and island defenses, against his troops in the field. Those operations had helped

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ground and naval forces to check the Jap's advance, then to throw him back; by the seizure or neutralization of island bases his perimeter had been constricted. In the CBI the Tenth and Fourteenth Air Forces had been successful in their primary mission of keeping open the air link between India and China; they had cooperated with ground force operations and the Fourteenth had been able, by staging through fields in east China, to reach out with heavy and medium bombers and take toll of Japanese shipping in the China Sea. But the important targets of the Inner Zone had been immune to land-based air attacks, girded about with a formidable chain of island bases and lying far beyond the range of the B-17 or B-24 from any U.S. airfield. A few strikes against oil installations in the Netherlands East Indies (NEI) had most nearly approximated the AAF's classic concept of strategic bombardment, but those targets, at the very edge of the tactical radius of Liberators, were far from metropolitan Japan. Now as summer of 1944 came in, joint U.S. forces had set the stage for a new type of air operation.

For the air strategist the controlling factor was distance. He could inscribe on a chart of the Asia–West Pacific area two arcs with 1,600-mile radii—one centered at Chengtu and one at Saipan—and see within the two segments the whole heart of the Japanese Empire. Very long range bombers based at those foci and properly supplied could subject the very source of the Japanese war effort to the same sort of attack which had paved the way for the recent invasion of Europe. By 15 June VLR bombers,* in moderate numbers, were available. One of the base areas had been developed, the other was being wrested from the enemy. For the former a system of supply, fantastically uneconomic and barely workable, had been devised; for the latter the logistical problem appeared in prospect much simpler. From the point of view of those who saw in the airplane a strategic weapon, all that had passed was prologue. And that prologue had begun with the development of the weapon itself—Boeing's B-29, officially labeled Superfortress and designated in coded radio messages by such fanciful titles as Dreamboat, Stork, or Big Brother.

* To describe the B-29 and B-32 the AAF used indiscriminately the terms Very Long Range (VLR) bomber and Very Heavy Bomber (VHB). The latter term was the official designation of units, as in 58th Bombardment Wing (VH), but in most of the early planning papers VLR was the favored term, and rightly, since it was range rather than bomb load that was stressed.

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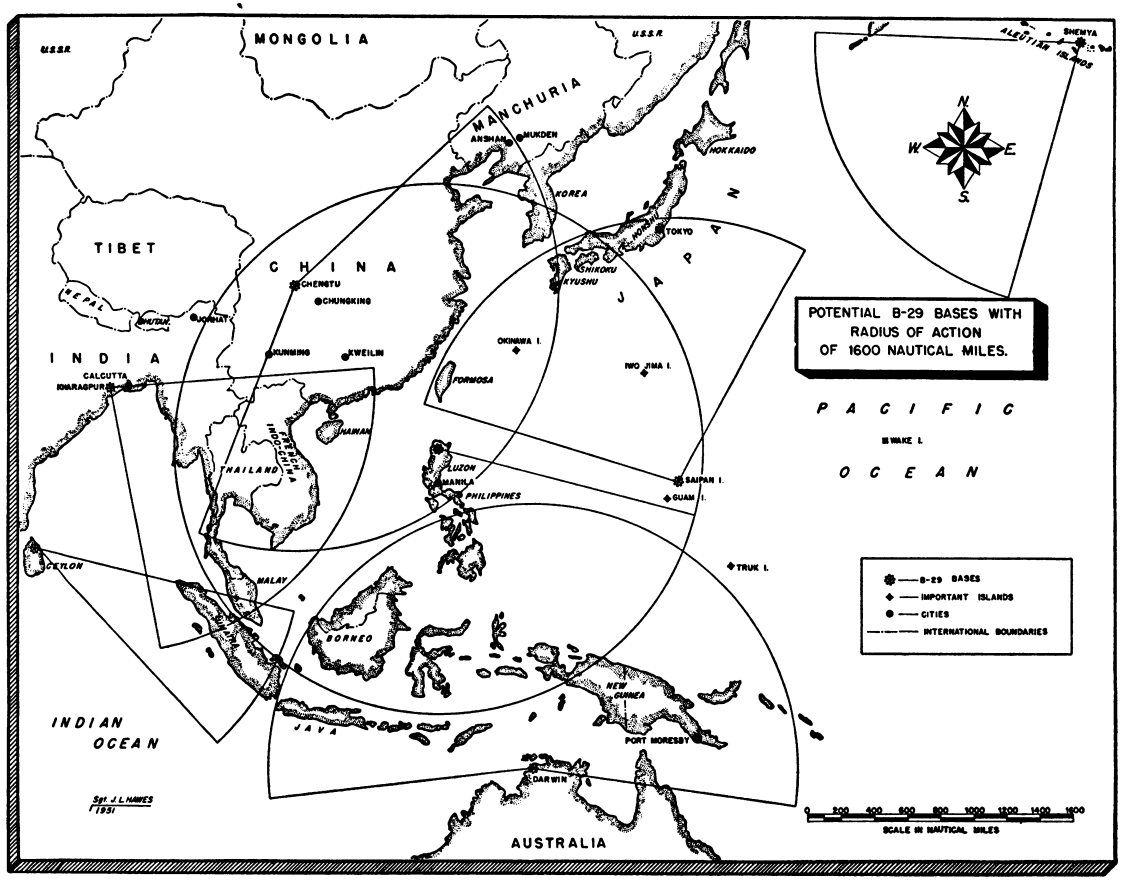

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The Weapon

The inception of the B-29 program can be traced back to 10 November 1939. On that date General Arnold, then Chief of the Air Corps, asked permission of the War Department to initiate action for experimental development of a four-engine bomber of 2,000-mile radius and superior in all respects to the B-17B and the B-24.[2] The desired authority was granted on 2 December, and on 29 January 1940 Request for Data R-40B was circulated among five leading aircraft manufacturing companies.[3] During February the stipulated requirements were in several instances revised upward, and on the basis of specifications of 8 April preliminary designs were submitted by several companies. An evaluation board appraised the designs and rated the competitors in this order of preference: Boeing, Lockheed, Douglas, Consolidated.[4] Contracts for preliminary engineering data were issued to the firms on 27 June[5] and their planes were designated, respectively, the XB-29, XB-30, XB-31, XB-32. Lockheed and Douglas subsequently withdrew from the competition. Orders placed on 6 September for two experimental models each from Boeing and Consolidated were later increased to three. Mock-up inspections occurred on 7 April 1941.[6]

The XB-32 was first to fly, its initial model being airborne on 7 September 1942. After thirty flights that model crashed on 10 May 1943. The second and third models flew first on 2 July and 9 November, respectively. Frequent changes in design so retarded the development of the B-32 that only in the closing days of the war did a few of them get into combat;* hence, in the present context the B-32 is of interest only as it appears in plans as a possible teammate of the B-29.

The first XB-29 model made twenty-two test flights between 21 September and 28 December 1942. The second model, airborne first on 28 December, caught fire and crashed on 18 February 1943 in a costly accident which wiped out Boeing's most experienced B-29 personnel (including test pilot E. T. Allen and ten engineers) and a score of workers in a nearby factory.[7] This tragedy delayed the program by several months while changes were made to cut down on the fire hazards, but in June the third model made eight successful flights, after which both it and the first number were turned over to the AAF at Wichita for armament and accelerated flight testing.[8]

* See below, p. 332.

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Months before this a tentative production schedule had been drawn up, and the first production model rolled off the line in July. This was a highly unusual procedure in air procurement, a token and a result of the urgency felt by the Air Corps as war clouds had gathered in 1940. Ordinarily, a plane must pass rigorous service testing before purchase contracts are made: it had been six months after the first successful test flight of Boeing's B-17 before the Air Corps placed an order for thirteen planes, another year before the first was delivered. But time seemed short in 1940 and the development of a very heavy bomber was a slow and unpredictable task. General Arnold's estimate that the B-29 could not be procured by normal processes before 1945[9] was grounded on experience—the XB-19, latest forerunner of the Superfortress, was contracted for in 1936, first flown in 1941, and *never* put into production. In the emergency, with a new emphasis on heavy bombers in defense plans, the Air Corps decided to order the B-29 into quantity production even before the plane had been airborne. This radical departure from long established custom—called familiarly "the three-billion-dollar gamble"—not only involved a huge financial risk, it threatened also to disrupt schedules of desperately needed aircraft models already in production. Nonetheless, the Air Corps on 17 May 1941 authorized Boeing to begin manufacture when ready. This authorization, based on a mass of blueprints and a wooden mock-up, came six months before the XB-29's maiden flight. When the plane first lifted off the runway, 1,664 Superfortresses were on order.[10] Long before the first combat mission, that number had been sharply increased.

The story of B-29 development and production is a complex one. In magnitude and boldness of design the program was remarkable in a war replete with production miracles. Four years, not the five originally expected, elapsed between submission of preliminary designs and departure overseas of the first B-29 units. The ultimate success of the gamble derived in no small part from closest cooperation between the Air Corps Materiel Center, Boeing, and a host of other participating civilian firms. The huge size of the Superfort, the extraordinary performance demanded, and a number of revolutionary features (most notably the pressurized cabin and remote-control turrets) presented numerous engineering difficulties. Here Boeing's experience with heavy commercial transports, with the various B-17 models and with the abortive XB-15 proved invaluable. To a large degree the fail-

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ure of the XB-15 and Douglas' XB-19 had stemmed from lack of sufficient power. A new engine designed by Wright promised to obviate that difficulty for the B-29, but the engine, like the plane, had novel features and long remained an uncertain factor. Delays inevitable in developing a new aircraft were aggravated by numerous modifications which the Air Corps ordered—a change in the type of gun turrets, for example, cost weeks of time in 1943–44. Suggested by tactical experience, these modifications sacrificed performance as well as time in favor of crew survival. Here as in most cases the conflict between the engineer's desire to retain purity of design and the airman's wish for a plane which would bring him back alive ended in a compromise heavily weighted in the airman's favor. As W. E. Beall, the Boeing engineer in charge, said, "When I put myself in the place of the guy in the cockpit, I can see his point."[11]

Quantity production involved intricate arrangements within the aircraft industry. Boeing devoted its Renton and Wichita factories exclusively to B-29 production and eventually, as Douglas and Lockheed assumed responsibility for building the B-17, its No. 2 plant at Seattle. Bell Aircraft (at Marietta) and Fisher Bodies (at Cleveland) and later Glenn L. Martin (at Omaha) built airframe assemblies. Engines were made by Wright and Chrysler-DeSoto-Dodge; dozens of other firms furnished components, instruments, and equipment.[12] It was an all-American team which sent the B-29 against Japan.

Eventually the Superfortress became as familiar to the American public as the Flying Fortress. For all its deadly mission the B-29 was a thing of beauty, its lines as sleek as a fighter's and its skin, flush-riveted and innocent of camouflage paint, a shining silver. Its size could best be appreciated when it stood near a B-17, which General Arnold soon came to call "the last of the medium bombers." Even the dry recital of the B-29's characteristics and performance data, as they were used by tactical planners in 1944, appeared impressive. The B-29 had a span of 141′ 3″, a length of 99′, an over-all height of 27′ 9″. It had a basic weight of 74,500 pounds, combat weight of 12,000, maximum war weight of 135,000. Four Wright R-3350-23 engines with turbosuperchargers developed 2,200 horsepower each at sea level to turn 16′ 7″ four-bladed Hamilton propellers. The plane was armed with twelve .50-caliber machine guns and a 20-mm. cannon carried in the tail. The remote-control turrets were power-driven.[13]

Performance, as in any plane, varied with a number of factors. Stand-

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ard estimates gave it a service ceiling of 38,000 feet and at 33,000 feet a maximum speed of 361 m.p.h. Its range (a subject of much debate until combat experience provided incontrovertible data) was calculated at 4,400 miles without bombs, 3,500 miles with a four-ton bomb load. In spite of very heavy wingloading and a stalling speed of 125 m.p.h., landing speed was brought within practicable limits by tremendous flaps, partly retractable.[14] Pilots with B-17 or B-24 experience found the B-29 "hot" to handle and at first compared it unfavorably with their former planes. Eventually, however, they swore by, rather than at, the Superfort.

Early Plans for the Use of the B-29

In November 1943 an AAF general remarked that "the B-29 airplane was thought out and planned as a high altitude, long-range bomber to attack Japan, her cities and industrial keypoints."[15] When he wrote, it appeared that the B-29 would be dedicated solely to that mission and so time was to prove. But his statement needs some qualification. When the Superfortress was conceived, the Air Corps was faced with responsibilities of more immediate concern than the destruction of Japanese cities. In the feverish telescoping of research, development, testing, and procurement which followed, it was inevitable that uncertainty should exist as to when the B-29 could be committed to action. Plans for its use fluctuated with readjustments in the production schedule and with changes in the strategic or tactical situation. Only in late 1943 were those plans firmly oriented toward Tokyo.

The theory that strategic bombardment constituted the prime function of military aviation had received much emphasis within the Air Corps during the 1930's and had stimulated interest in the development of long-range heavy bombers.* Yet the argument most often advanced to secure funds for such planes as the B-17 and XB-15 had been based on the security they could afford, through long-range reconnaissance and sea strikes, against an attempted invasion of the United States or its outlying possessions. As the concept of hemisphere defense developed in the years 1938–41, Air Corps thought turned increasingly to the dangers of an Axis lodgment in some other American country from which aircraft could strike at points vital to our national safety. Counter-air operations then took on top priority

* See Vol. I, Chap. 2.

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among the missions of the Air Corps, whose strategists proposed to meet the new responsibilities with a force of long-range bombers. Successive reports by various Air Corps boards from 1938 to 1940 stressed the necessity of developing bombers with performance characteristics superior to those of the B-17 and B-24; suggested operating radii varied from 1,500 to 4,000 miles.[16] The specifications from which the B-29 and B-32 were developed approximated most nearly those of a 2,000-mile radius bomber recommended by the Kilner Board in the summer of 1939 when large sums were being appropriated for hemisphere defense.[17] It was the allocation of $4,700,000 from those sums for the procurement of five experimental heavy bombers that had enabled General Arnold to inaugurate the competition which eventually produced the B-29.[18]

Ostensibly at least, the B-29 grew out of a responsibility for defending the two Americas and that mission predominated in early discussions of its use. But in an organization so thoroughly inbued with a doctrine of the offensive as was the Air Corps, it was natural that the so-called "Air Board heavy bomber" should be viewed as a weapon capable of carrying war to our enemy's homeland. As early as September 1939 Col. Carl A. Spaatz suggested that this plane (i.e., the future B-29) might be used against Japanese industry from bases in Luzon, Siberia, or the Aleutians.[19] The progress of the war in Europe, particularly after the fall of France, stimulated concern for the safety of the Americas; at the same time it gave impetus to consideration of means of attacking potential enemies in their own territory. The grave danger that Britain might fall gave point to an examination of the possibility of employing, from bases in North America, a projected 4,000-mile radius bomber, but its completion was not expected before 1947, and more immediate needs would have to be met by existing models and by the B-29 or B-32.[20] Those planes could not bomb Germany from North America but they could from England or the Mediterranean. When in the spring of 1941 the U.S. and British military staffs began to plan for collaboration should the United States be drawn into the war, the VLR bomber became, in anticipation, the AAF's most potent offensive weapon. In the Air Staff's first war plan (AWPD/1, 11 September 1941),* the original defensive role of the B-29 no longer figured: by 1944 twenty-four B-29/B-32 groups were

* AWPD/1 formed the AAF section of the Joint Board Estimate of U.S. Over-all Production Requirements, 11 September 1941. For a fuller analysis, see Vol. I, 145–50.

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to be engaged in bombing Germany from bases in Great Britain and Egypt; two groups *might* operate against Japan from Luzon.

This heavy weighting in favor of European targets derived from the cardinal principle of Anglo-American strategy: that the Allies should concentrate their main efforts against Germany until that country succumbed, Japan being meanwhile contained in a defensive war in which naval forces would predominate. In spite of Japanese successes in the months which followed Pearl Harbor, AAF strategists adhered staunchly to this concept of the war. Forced immediately to divert air strength to the Pacific, and in autumn of 1942 to the Mediterranean, they still looked on the bomber offensive against Germany as the AAF's most important mission. Hence in long-term over-all plans emanating from the Air Staff during the first year of the war—AWPD/4 (15 December 1941) and AWPD/42 (9 September 1942)—B-29's and B-32's were assigned almost exclusively to Europe.* Only when victory there should free them for redeployment and bases within striking distance of Honshu could be won, would VLR bombers be used against Japan.

This design for employment of the B-29 persisted in AAF Headquarters without serious challenge until the spring of 1943. The North African campaign with its heavy demand for air forces had seriously weakened Eighth Air Force efforts against *Festung Europa*, and projected operations in the Mediterranean would continue to drain off needed air units. But at Casablanca the Combined Bomber Offensive against Germany had been approved in principle and B-29's could add to the impact of that campaign. Rather than go on to invade Sicily and Italy, Air Staff planners would have preferred to use Tunisia bases for VHB operations against German industry, shuttling B-29's between England and North Africa as weather conditions might dictate.[21]

This concept was indorsed by theater AAF leaders. Lt. Gen. Carl A. Spaatz of the Northwest African Air Forces had developed on Arnold's prompting a scheme for an over-all theater air force linking units in England and North Africa.† Maj. Gen. Ira C. Eaker of the Eighth Air Force, charged with developing a plan for the Combined Bomber Offensive, attempted in March 1943 to secure from Washington a tentative deployment schedule of B-29 groups. Neither

* For discussion of these plans, see, respectively, Vol. I, 236, and Vol. II, 277–79.
† See Vol. II, especially pp. 60–66.

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this nor subsequent requests brought definite commitments. No groups would be combat-ready before the end of the year at best and by summer plans for using the B-29 were favoring Japan. So long were those plans in crystallizing that it was December before Arnold could inform Eaker definitively that VHB's would not be used in Europe.[22]

Meanwhile, both before and after the reversal of Air Staff plans, AAF Headquarters had been besieged by requests for B-29's from other theaters and agencies. In April 1943 the Antisubmarine Command tried, unsuccessfully, to have twenty-four B-29's earmarked for early delivery.[23] Similarly the Navy wished to obtain Superforts to supplement its AAF-procured B-24's in long-range reconnaissance and in their war against the U-boat. This request, hardly in keeping with the Navy's long struggle against high production priorities granted the B-29, drew from AAF authorities on 7 July the curt comment that "the Army Air Forces will not discuss the allocation of B-29's to the Navy."[24] Queries came from every theater in the war against Japan, where distances lent special value to the B-29's range: from Brereton in the CBI in March 1942;[25] from Emmons in Hawaii after the battle of Midway had taxed the endurance of his B-17's;[26] from Harmon in the South Pacific who would have used VHB's out of Borabora;[27] from the North Pacific after U.S. victories in the western Aleutians revived earlier designs for bombing Japan from that area.* The Southwest Pacific received most serious consideration. Maj. Gen. George C. Kenney of the Fifth Air Force had helped develop the B-29 while serving with the Materiel Division at Wright Field (1939–42), and he seems to have entertained some belief that he enjoyed a personal priority in plans for its use. In June 1943 he began seeking information on the special type of airfield required and on 28 July wrote to Arnold: "I hear that the B-29 is flying again. I assume that I am still to get the first B-29 unit."[28] Three months later Arnold asked Kenney his views on the best use of the B-29 in the war against Japan. In a long and enthusiastic letter Kenney outlined a plan for striking at Japanese petroleum installations, shipping, and military bases from airfields in Darwin and Broome. He concluded: "If you want the B-29 used efficiently and effectively where it will do the most good in the shortest time, the Southwest Pacific area is the place and the Fifth Air Force can do the job."[29] There were some in Washington who agreed

* See Vol. IV, 399–400.

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both to the area and the targets,* but when Kenney's letter arrived, AAF Headquarters was firmly committed to another use for the B-29, and he was so informed.[30] The new plan had grown out of a threatened crisis in CBI.

MATTERHORN

When President Roosevelt and Prime Minister Churchill assembled their advisers in Washington on 11 May 1943 for the TRIDENT conference, the war against Germany was still their primary concern. The Tunisian campaign was just finishing, belatedly, with the Axis surrender on Cap Bon, and the invasion of Sicily was in the offing with Italy as the next logical objective. From England the Combined Bomber Offensive was getting under way, and in spite of diversions to the Mediterranean the build-up of huge forces in the United Kingdom must be provided for if the continent was to be invaded in 1944.

Nevertheless the two leaders and their Combined Chiefs of Staff were confronted with serious problems in Asia and the Pacific. The war against Japan had been so far a defensive one. American forces had checked the Japanese advance eastward at Midway, southward in the Solomons and New Guinea; with the successful termination of the Guadalcanal and Papua campaigns and the recent landing on Attu, the Allies could begin to think of the long trek back to the Philippines and on to Japan. Except for naval forces, allocations for the Pacific and for Asia would continue to be subordinated to the needs of the European war, but it was time to take stock in the Far East.

Deliberations followed two correlative but distinct lines—one general, the other specific and more immediately urgent. First, since some hope existed that Germany might be defeated by the end of 1944, plans must be formulated for the redeployment of forces from Europe and for a strategic offensive against Japan both before and after that move. Meanwhile, Japanese armies were consolidating gains in war-weary China. British failures in Burma had damaged the Allied cause in China, and the deteriorating tactical situation there was proving embarrassing to the Chungking government. A more vigorous policy in CBI, both by the western powers and by China, seemed imperative if the latter country was to be kept in the war.

No final solution for either of those related problems could be found at TRIDENT, and they were to reappear at the Quebec con-

* See below pp. 28–30.

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ference in August and at Cairo in November. In the meanwhile, a fairly dependable estimate of the readiness date of the initial B-29 groups had become available. Too late to allow those groups to play any considerable part in the pre-invasion bombardment of Europe, that date could readily be fitted into a schedule of operations against Japan. So it was that the B-29 came to figure prominently in discussions both of long-term Pacific strategy and of immediate aid to China. Little opposition was voiced at high planning levels over the proposed diversion of VHB's from Europe to the Far East. But among the several services, agencies, and individuals concerned there were dissident opinions as to where and how the B-29 could best contribute to the defeat of Japan, and a final decision was not reached until after months of planning and debate. To understand how the B-29 fitted into the general pattern of the Japanese war, it becomes necessary to follow the development of strategy for China and for the Pacific from May 1943 to April 1944. The story is an involved one and, worse, it is a story of words and papers rather than of actions, but it is an important one nevertheless.

From the outset of the war Anglo-American authorities had refused to commit strong forces in China. The war could not be won there; supply was exceedingly difficult and available units were needed elsewhere. With China's unlimited manpower, it seemed preferable to furnish munitions through lend-lease and to provide minimal air forces and technicians and training in the use of modern equipment. Thus China might be saved to serve later as a base area for the eventual assault on Japan. The Japanese conquest of Burma in 1942 had closed the Burma Road, cutting down the flow of lend-lease supplies to a thin trickle delivered "over the Hump" by air. To break the Japanese blockade would require the reconquest of northern Burma to open a road to Kunming, or a sharp increase of air transport out of Assam. At Casablanca in January 1943 Anglo-American leaders had promised substantial aid toward both these goals, but performance had fallen far short of promises.* In April Chiang Kai-shek asked Roosevelt that Maj. Gen. Claire L. Chennault be called to Washington to present a new plan for an air offensive by his Fourteenth Air Force. Other top U.S. and British commanders were summoned as well and met with Roosevelt, Churchill, and their chiefs of staff in the TRIDENT conference.[31]

* See Vol. IV, 435–49.

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Two strategies were presented. Lt. Gen. Joseph W. Stilwell, U.S. theater commander and chief of staff to Generalissimo Chiang Kai-shek, wished to bend all efforts toward regaining Burma, opening the truck road to China, and utilizing much of its tonnage to equip a large modernized Chinese ground force to drive the Japanese out of China. Chennault's plan called for a greatly increased airlift into Kunming, with most of the additional tonnage going to an augmented air force in China. Thus reinforced, Chennault thought he could maintain with existing Chinese armies an effective defense against Japanese air and ground forces by cutting their inland supply routes and at the same time could reach out from airfields in eastern China to harass the enemy's sea lanes.[32] In the Washington debates Chennault's arguments won out; the British were not eager for intensive campaigns in Burma and, according to Stilwell, Roosevelt "had decided on an air effort in China before we reached Washington."[33] New promises were made.[34]

This decision, favored by Chiang Kai-shek, was a concession to the immediate need for encouraging China; that nation was also important in the long-term offensive strategy recommended by the Combined Planning Staff (CPS).[35] This strategy called for an intensification of operations currently projected in China and Burma, but its chief concern was to carry the war to Japan. Hong Kong was to be recaptured to serve as a port of entry, and from bases to be prepared in east China the Allies were to conduct against Japan an overwhelming bomber offensive preparatory to a final invasion. Hong Kong was the logistical kingpin of this plan; capture and use of the port depended upon Allied control of the China Sea, which in turn must await advances from the Central and Southwest Pacific by U.S. forces. At the direction of the Combined Chiefs of Staff, their planners undertook to elaborate this general concept of operations.[36] They completed the task on 8 August 1943 in anticipation of the next general conference.[37]

The finished plan counted heavily on the naval and air superiority of the Allies, which would be overwhelming after redeployment from the ETO. The destruction of Japanese sea and air forces, the blockade of Japan, and the long-range bombardment of strategic targets in the home islands from bases in China or Formosa—these were considered as absolute prerequisites, perhaps even as substitutes, for a final invasion. The timing was slow. Consciously accepting the most conservative date for each operational phase, the CPS expected the bomber offensive to begin *only in 1947*. Because of the minor part assigned to

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ground forces one critic was moved to label this a "Navy plan." But the strategy, with its emphasis on the recapture of Hong Kong and its preference for indirect methods of attack over an assault in force on the Inner Empire, was essentially British, repeating for the Far East the pattern of operations which they had supported in Europe. American strategists favored, in the Japanese war as in the European, a faster pace.

A week after this plan was finished Roosevelt and Churchill met at Quebec in the QUADRANT conference (14–24 August 1943). Again the related problems of immediate aid to China and preparations for the eventual defeat of Japan were associated in the agenda. Further commitments to the Generalissimo carried a plea for stronger Chinese cooperation.[38] The CCS tabled the over-all plan offered by their planners because of its slow tempo.[39] To advance the target date for landings on the east China coast, the U.S. Chiefs of Staff submitted instead an accelerated schedule of operations in the Pacific.[40] The final report of the CCS to the President and Prime Minister reflected this more aggressive attitude.[41] The new strategy was predicated on the assumption that Japan could be defeated within twelve months after Germany's surrender. So early a victory would require rapid redeployment and a willingness to capitalize on Allied air and naval superiority and on "novel methods of warfare." For planning purposes, the JCS revised schedule of Pacific operations was accepted. Briefly, this contemplated an advance by U.S. naval and amphibious forces through the Central Pacific via the Gilberts-Marshalls-Ponape-Palaus, coordinated with a parallel sweep by MacArthur's forces from southern New Guinea and the Solomons through the Bismarck Sea and Admiralties and along the New Guinea coast to Vogelkop. The feasibility of attacks on the Marianas and Kurils needed further study.[42]

Meanwhile, the British were to carry the main combat burden in the CBI. Chief objectives for the Americans were to drive a land line of communications (LOC) through from India to China (Ledo Road), to improve air transport routes, and to build a Calcutta-Assam-Kunming pipeline. The common end of these operations was to maintain China as an effective ally and to allow U.S. and Chinese air forces to increase the intensity of their strikes against the enemy. This emphasis upon the air war, prefigured in the TRIDENT decisions, was climaxed by a paragraph calling for a study of the possibilities of developing the air route to China on a scale which would permit the full

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employment in and from China of all heavy bombers and transports made available should Germany capitulate by autumn 1944.[43]

This last item had been suggested by an AAF plan for defeat of Japan which the JCS had circulated, without indorsement, on 20 August.[44] In spite of a continuing preference for using the B-29 in Europe, AC/AS, Plans (Maj. Gen. Laurence S. Kuter) in March 1943 had initiated detailed studies preliminary to a plan for the VLR bombing of Japan out of China bases.[45] Concurrently General Arnold had directed the Committee of Operations Analysts (COA) to prepare an "analysis of strategic targets in Japan" whose destruction might end the war.* In the early months of the war the AAF had been interested in a number of schemes for bombing metropolitan Japan: the celebrated Doolittle raid from a Navy carrier and the HALPRO and AQUILA projects, abandoned because of emergencies elsewhere, which had counted on using B-24's to stage through east China airfields.† With the forces available and the logistical difficulties involved, neither project could have conducted a sustained bombardment program, but there was hope that strikes at Japanese cities would have a marked psychological effect in Japan, China, and America. These designs, like the Doolittle mission, had the President's sanction, and in the summer of 1943 he was still anxious to use U.S. bombers against Japan as a spur to China's war effort.[46] Air Staff planners coupled this morale factor with the new concept of a short war in the Far East. Current estimates indicated that ten B-29 groups (twenty-eight planes each) might be available by October 1944, ten more by May 1945. According to existing schedules, no Pacific islands within B-29 radius of Honshu would be in U.S. hands in 1944, but China offered bases within practical operating range and with the requisite capacity and dispersion.[47] Political and strategic considerations reinforced this choice. The AAF planners believed that "the initiation of the bomber offensive, and even measures in preparation therefor, [would] tremendously stimulate Chinese morale and unify the Chinese people under the leadership of Chiang Kai-shek."[48] The latter's support of Chennault's proposals at TRIDENT might have seemed to justify such a hope.

At any rate, the AAF proposed to build a chain of airfields along a 400-mile axis north and south of Changsha. Within a radius of 1,500

* See below, pp. 26–27.
† See Vol. I, 438–44, 493.

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miles from these fields—that is, within reach of the B-29 with a theoretical ten-ton bomb load—lay most of Japan's industries. With groups performing 5 missions a month at 50 per cent strength, 168 group-months would suffice to destroy the designated targets and that effort could be applied within the 12 months allowed. Unwilling to await the recapture of Hong Kong, the air planners expected to operate without benefit of an east China port.[49] Logistical support must come via India, and without prejudice to other operations. Defense forces—a U.S.-trained Chinese army and the Tenth and Fourteenth Air Forces—would tax present and projected supply lines. For the bomber offensive all supplies were to go by air, Calcutta to Kunming to Changsha. In this task B-24's released by victory in Europe and converted into transports (C-87's) were to be used at the rate of 200 per B-29 group—that is, 2,000 by October 1944, 4,000 by May 1945. Port facilities were thought adequate for the estimated requirements of 596,000 tons per month.

The Combined Chiefs referred this ambitious design, coded SETTING SUN, to their own planners for a report by 15 September.[50] Meanwhile, queries as to the practicability of some of the proposed measures elicited from the CBI commander a detailed and unfavorable critique: Stilwell cited logistical difficulties (including the limited port capacity of Calcutta) and thought the time schedule entirely too optimistic.[51] On request from Washington, Stilwell offered an alternative plan, coded TWILIGHT.[52]

This called for the use of several airfields along the Kweilin-Changsha railroad (Liuchow, Kweilin, Suichwan, Hengyang), but as advanced rather than as permanent bases. For security and better maintenance facilities, the B-29's would be stationed in the Calcutta area. Much of the fuel required for a mission to Japan could be carried by the combat planes. Extra fuel, bombs, and other supplies would be hauled by 45 "converted B-24's" and 367 C-54's or C-87's direct from Calcutta to Kweilin. By April 1945 these transports could sustain 10 B-29 groups flying 500 sorties per month. Calcutta could handle the 58,000 tons monthly of dry cargo and the POL (petrol, oil, and lubricants) for this program. Installations could be built on time with U.S. aid. Later B-29 groups might be stationed in the Mandalay area.

TWILIGHT bore the stamp of CBI. Drafted by men who knew from bitter experience the difficulty of meeting commitments in that theater, the plan called for more time, a smaller effort, and less logis-

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tical support than that outlined by AAF Headquarters. Only in the matter of security forces was the theater lavish. Stilwell had argued at TRIDENT—and Doolittle's Tokyo raid seemed to bear him out—that the Japanese would react sharply against a bomber offensive with large-scale air and ground campaigns in China.[53] Now Stilwell insisted on fifty U.S.-trained and -equipped Chinese divisions for ground protection of the airfields, and for air defense a reinforced Fourteenth Air Force plus five fighter groups attached to the B-29's. With those forces China might have become an active theater regardless of the performance of the VHB groups, and it is difficult to avoid the conclusion that theater commanders had that purpose in mind.

Having outlined his proposals in a long radio message on 11 September, Stilwell immediately sent Brig. Gen. Robert C. Oliver of India-Burma Sector, AAF to give a more detailed description in Washington. There Oliver found the CPS ready to consider TWILIGHT, but desirous also of examining any proposed B-29 operations in the whole context of the accelerated strategy.[54] In accord with this latter attitude, General Kuter's office prepared a new outline plan which was sent to the Joint Planning Staff on 16 September.[55] This indorsed the general concept of TWILIGHT, but set an earlier target date. Without ruling out the possible use of the Mandalay-Rangoon area for the second contingent of ten B-29 groups, the AAF planner went on to consider other base areas. In so doing he gave an entirely new twist to U.S. strategy.

At QUADRANT the JCS had evinced some interest in seizing the Marianas, perhaps in early 1946, as a site for a naval base.[56] The AAF later suggested, on 10 September, that D-day be advanced to mid-1944 by neutralizing and bypassing, rather than capturing, certain Pacific islands; the "basic mission" of the Marianas operation would be to provide VHB bases.[57] The Air Staff planned to station eight B-29 groups in the Marshalls-Carolines area and stage them through the Marianas to strike at Japan—beginning by March 1945 or earlier.[58]

Directed by General Arnold, a special board reviewed this outline plan and on 20 September recommended the immediate elaboration of a modified TWILIGHT plan.[59] This was without prejudice to the design for later use of the Marianas, but for a year China would remain the sole area from which the B-29 could reach Japan. That argument, perhaps sufficient alone to have outweighed the obvious logistical handicaps of the CBI, was supported powerfully by the political fac-

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tor, the need to strengthen China's morale. Accepting the board's report, Arnold called in Brig. Gen. Kenneth B. Wolfe and asked him to prepare an operational plan calculated "to initiate strategic bombardment of Japan with the maximum of available B-29's at the earliest possible date."[60] The choice of Wolfe, like the directive, indicated that planning had reached a more urgent phase.

At Wright Field, Wolfe had earlier been responsible for the B-29 production program. In April 1943 General Arnold had set up a B-29 Special Project with Wolfe as chief; his task now included organizing, equipping, and training B-29 units for combat. With production schedules promising 150 B-29's early in 1944—enough to provide for 4 VHB groups—Wolfe had organized the 58th Bombardment Wing (H) and in September was training his combat groups in airfields near his headquarters at Salina, Kansas.* By 24 September he had sketched in the main outlines of his plan, basing it on TWILIGHT but advancing D-day for the first mission to 1 June 1944 by making several important changes. He proposed to make his project virtually self-supporting by transporting supplies for 100 B-29's based in the Kweilin area with 150 other B-29's working out from fields near Calcutta.[61] Since June was too late to comply with the President's desire for an immediate show of force in China, Wolfe revised his plan, making some considerable alterations and adding details on logistics, organization, and operations. This he submitted to Arnold on 11 October.[62]

Wolfe expected to have a force of 150 aircraft and 300 crews by 1 March 1944, 300 planes and 450 crews by 1 September—plus normal replacements. These he proposed to organize into a bomber command with two wings of four combat groups each. Stilwell was to provide bases in India and China and to improve certain transportation facilities—air, ground, and water. All B-29's were to base in the Calcutta area, staging through advanced fields around Kweilin. Operations would begin about 1 April 1944 with the arrival of the first wing. After 3 closely spaced 100-sortie missions, the weight of attack would be maintained at 200 sorties per month until September when the arrival of the second wing would support 300. Supply would be by the B-29's themselves, aided, until an initial stockpile had been accumulated, by the Fourteenth Air Force's 308th Bombardment Group (H) reinforced by twenty C-87's. The Superforts would be utilized

* See below, pp. 53–54.

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for transport and combat in the ratio of three to two, but without modification so that any plane could serve in either capacity. After the first three missions, the B-29's would maintain operations at the rate of three Calcutta-Kweilin transport sorties for each combat sortie with double crews supporting this constant activity. No additional ground defense was called for. Air defense would be furnished by Chennault's air force, strengthened by two fighter groups supplied by increased ATC tonnage and the reinforced 308th Group.

Wolfe pointed out certain weaknesses in his plan—its logistical inefficiency and the vulnerability of advanced airfields and of supply lines—but thought it acceptable as a calculated risk.[63] Discussion with AC/AS, Plans on 12 October turned largely on the site of the advanced bases. Col. G. C. Carey of that office, pointing out Stilwell's insistence that fifty first-class Chinese divisions would be needed to defend Kweilin, suggested that Chengtu in Szechwan province be used instead. Anxious to get an immediate approval of such general features of the plan as were necessary for initiating action, Wolfe accepted this change and temporarily reserved judgment on other "minutiae which may be controversial at the moment."[64]

On 13 October General Arnold approved in principle the "Wolfe project," indorsing it in his own hand: "I have told the President that this will be started (in China to Japan) on March 1. See that it is done. H. H. A."[65] Even this further advance in the target date did not satisfy President Roosevelt. He wrote to General Marshall on the 15th, somewhat querulously:

> I am still pretty thoroughly disgusted with the India-China matters. The last straw was the report from Arnold that he could not get the B-29's operating out of China until March or April of next year. Everything seems to go wrong. But the worst thing is that we are falling down on our promises every single time. We have not fulfilled one of them yet. I do not see why we have to use B-29's. We have several other types of bombing planes.[66]

At Marshall's request, Arnold prepared a reply explaining that the difficulties always encountered in getting a new plane into combat had been complicated by labor difficulties in a Wright engine factory; he offered to divert B-24's to China but reminded the President that only B-29's could hit directly at Japan.[67] His offer was not accepted and the March-April target date held.

Asked to compare the merits of TWILIGHT and the Wolfe project, Stilwell rated the latter as more immediately feasible in view of

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the lighter defense forces required at Chengtu—only two fighter groups and no extra ground troops. He did not think it possible to deliver a knockout blow from Chengtu (nor did Washington!) but accepted the plan, asking for an early decision since he needed four to six months to prepare the airfields.[68] Thus assured, Air Staff personnel continued to refine and elaborate the Wolfe project until 9 November when they presented to the JPS the finished plan, called "Early Sustained Bombing of Japan"[69] and eventually coded MATTERHORN.*

The timing was inconvenient. Roosevelt and Churchill had scheduled two important military conferences for the immediate future: one at Cairo (SEXTANT, 22–27 November; 2–7 December) which Chiang Kai-shek would attend, the other with Stalin at Tehran (EUREKA, 28–30 November). MATTERHORN, as an all-American show, needed the approval only of the JCS and the President. Because it must be fitted into any over-all strategy adopted at the conferences, however, it was desirable that U.S. authorities be agreed on MATTERHORN before assembling at the council table. Furthermore, preliminary actions must begin at once if the new timetable was to be met. Because of the CBI's low priority in shipping and service troops, those actions would require much shuffling of allocations, and quick decisions were difficult during the general exodus of Cairo-bound staff members. What with lack of agreement among those officers and the complicated negotiations which transpired at SEXTANT and EUREKA, it was only after four weeks that MATTERHORN was finally approved. For four months thereafter the project was subject to intermittent attacks by opponents, and before the first B-29 mission was flown, Wolfe's original plan had been materially scaled down.

When the JPS reviewed the plan on 9 November, objections arose at once: from the Navy member because of overriding priorities demanded for B-29 production, from the Army member because of the proposed diversion of four battalions of aviation engineers to build the Calcutta bases. Unable to reach an immediate agreement, the JPS turned the paper over to the Joint War Plans Committee, asking for a

* TWILIGHT had been used in Stilwell's cable of 11 September to designate the Kweilin plan. That code name continued to be used loosely for any plan to base B-29's in China until the Cairo conference when MATTERHORN was assigned to Chengtu, TWILIGHT to Kweilin. Soon thereafter, TWILIGHT was changed to DRAKE. To avoid confusion, the terms are used in the text as they were defined at Cairo.

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report at SEXTANT by 17 November.[70] The senior members of JWPC, also headed for Cairo, delegated this task to their "Home Team." Meanwhile, necessary practical measures were taken, usually in a tentative fashion. The Joint Chiefs, pending advice from their planners, agreed to support preliminary negotiations for obtaining airfield sites in India and China.[71] In this matter Roosevelt acted more directly. Briefed on the MATTERHORN plan, he approved it in principle and on 10 November apprised Churchill and the Generalissimo of its salient features, asking for aid in securing the airfields. Both promised the needed sites and aid in construction.[72] Theater commanders, advised of these negotiations, turned to the task of preparing the installations against an early D-day.[73]

Other actions followed rapidly. Orders went out for the activation of XX Bomber Command, Wolfe commanding, with two VHB wings, the 58th and 73d.[74] At Arnold's request, the War Department alerted for shipment on 15 December certain designated service units for building the Calcutta installations.[75] Actual assignment of the units was contingent upon favorable decision by the JCS, but that was expected by AAF Headquarters because of the President's attitude.[76] The Joint Chiefs continued to discuss the plan on board the *Iowa* en route to Cairo and in the preliminary meetings there; they confirmed earlier provisional allocation of service troops and attempted to find the necessary shipping.[77] In a schedule of operations for 1944 which they drew up on 18 November for presentation to the CCS, they suggested the establishment of a VHB force in China, but without designating either the Chengtu or Kweilin area.[78] Firm commitment still hinged upon the general trend of the conference.

The report of JWPC's Home Team came in a series of four radio messages, beginning on 19 November. The gist of the earlier messages, based on *ad hoc* studies made by the Joint Intelligence Committee, was that MATTERHORN was feasible but uneconomic; current target selection (the steel industry's coke ovens) did not promise early decisive results.[79] If these messages implied a lukewarm approval, the fourth radio on the 24th was a sharp negative. Using a new and pessimistic estimate of the B-29's tactical radius, the Home Team concluded that few of the proposed targets could be reached from Chengtu.[80] They advised, therefore, a more careful study of MATTERHORN and of other possible base areas, notably Calcutta, Ceylon, and Australia. Base construction in the CBI might proceed, but

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the Wolfe project should not be brought before the Combined Chiefs. The quoted range data was challenged by the AAF (justly, as events were to prove),[81] but on 25 November the JPS, in accord with JWPC's advice, directed the Home Team to prepare a new study on "Optimum Use, Timing and Deployment of VLR Bombers in the War against Japan."[82] Meanwhile, the practical details of MATTERHORN were submerged in general debates concerning CBI.

On 23 November the Chinese, with General Stilwell attending as Chiang Kai-shek's chief of staff, met with the CCS to discuss China's role in the defeat of Japan.[83] To become an effective ally, China needed modern equipment and training. These could be provided in significant quantities only by improved air transport facilities and a truck road from India. For the latter, the reconquest of northern Burma (TARZAN) was a prerequisite. Anglo-American leaders expected to build up their combined air forces for that campaign, and to commit a strong British ground force plus some U.S. units. They asked the Chinese to cooperate by sending two columns, the American-trained X Force from India, the Yoke Force from Yunnan. The Chinese held out for a large-scale British landing in south Burma (BUCCANEER) as necessary for success in the north, and for 10,000 tons of Hump air freight per month. Chiang Kai-shek carried these demands to his meeting with Roosevelt and Churchill as the minimum price of Chinese participation.[84] Marshall, after lunching with the Generalissimo on the 24th, reported next day to his American colleagues that he "had received the definite impression that pressure would be brought to bear on the President to make some contribution to China sufficiently conspicuous to serve as a fitting conclusion to the Generalissimo's visit to the conference."[85] If he returned with only routine concessions, he would lose face in China. BUCCANEER would be a "conspicuous" contribution. So also would a 10,000-ton airlift a month, and the lend-lease it would provide. And so also, one might guess, would be MATTERHORN. At any rate, the British agreed to BUCCANEER, the Americans to the vast increase in ATC tonnage, and Chiang Kai-shek left for Chungking without tarrying for the final rounding out of Allied strategy.[86]

Then on 27 November Roosevelt, Churchill, and their staffs went on to Tehran to meet with Stalin. There momentous agreements were made: the western Allies would invade Europe in the spring of 1944, both in Normandy (OVERLORD) and on the Riviera (ANVIL);

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the U.S.S.R. would enter the war against Japan after the defeat of Germany.[87] These agreements promised eventually to shorten the war in the Pacific, but they snarled up plans for Burma. Stalin's insistence on ANVIL meant that landing craft must be diverted from the Indian Ocean to the Mediterranean, knocking out BUCCANEER; the British said, in effect, no BUCCANEER, no TARZAN.[88] Chinese reaction to this change could hardly be enthusiastic.*

Back at Cairo, the CCS turned again to the Japanese war. On 6 December they adopted, as revised, the JCS schedule of operations for 1944.[89] They also accepted for further study an over-all plan for the defeat of Japan which took cognizance of Stalin's promise of cooperation.[90] Summaries of both papers were included in the final report to the President and the Prime Minister and were approved by them as the conference adjourned on the 7th.[91] Plans for China stood thus: the Allies agreed to postpone (in effect, to cancel) BUCCANEER, and to follow a course of action to be determined on advice from Louis, Lord Mountbatten (Supreme Allied Commander, Southeast Asia) and Chiang Kai-shek. Either they would mount TARZAN, with carrier raids and land-based bombing attacks substituted for the amphibious assault in southern Burma; or they would increase Hump tonnage materially and conduct a heavy B-29 campaign from the Kweilin area. This second alternative was the CBI's TWILIGHT plan—now called DRAKE—which continued to enjoy some support among the planning agencies.

But the reversal of commitments made to the Generalissimo at the earlier Cairo session put a premium on a more immediate assignment of B-29's to China; the prestige value of receiving the first force of so impressive a plane as the Superfort might salve wounded pride. At any rate, the Joint Chiefs on returning to Cairo had included MATTERHORN in their list of approved operations,[92] and it was accepted at the governmental level. The wording of the JCS paper, with an indirect reference to Wolfe's peculiar logistical system, reflected perhaps some qualifications by approving "the establishing, *without materially affecting other approved operations* [italics added], of a very long-range strategic bombing force at Calcutta, with advanced bases at Chengtu to attack vital targets in the Japanese 'Inner Zone,' " target date 1 May 1944.[93]

This commitment to MATTERHORN confirmed the preliminary

* See Vol. IV, 495–97.

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measures taken for its implementation; as a member of the JPS said later, "Construction of airfields in the Calcutta and Chengtu areas is already under way and . . . in general events had overtaken the report."[94] But MATTERHORN was still not beyond challenge. The final report at SEXTANT had approved as well the capture of the Marianas, with B-29 operations from those islands beginning by the end of December 1944; interim strikes from Ceylon (after 20 July) at POL installations in the Netherlands East Indies; and preparation of bases in the Aleutians whence to hit the Kurils and Hokkaido. The over-all plan for defeat of Japan suggested other possible base areas, but delayed further recommendations until JWPC should complete its study on optimum use of VLR bombers. That study was to revive the earlier resistance to the MATTERHORN plan.

After SEXTANT

JWPC's Home Team had begun its new study on VLR operations early in December. The AAF had contested the accuracy of some of its assumptions and particularly had complained of its ignoring the recent report of the Committee of Operations Analysts on strategic targets in Japan. Target selection in MATTERHORN had followed preliminary conclusions of the COA, and now the Home Team was directed to utilize the COA's final report of 11 November.[95] Because much of the story of MATTERHORN revolves around this document, some analysis of its contents may be given here.

The COA had been established in December 1942 as an agency for the study of strategic bombardment targets.[96] Its membership comprised representatives of the several services and of civilian war agencies, as well as a few special consultants.* Reporting directly to General Arnold, the committee could tap military and governmental intelligence sources without following formal channels. The inclusion of distinguished civilians promised to provide certain funds of experience not to be found in military circles, and incidentally to give indirect support to strategic bombardment policies. The first COA study, on Germany, had profoundly influenced the nature of the

* The members signing the report of 11 November were: Brig. Gen. Byron E. Gates (Chairman); Maj. Gen. Clayton Bissell (AC/AS, Intelligence); Capt. H. C. Wick, USN; Col. Thomas G. Lanphier (G-2); Col. Malcolm W. Moss (A-2); Col. Guido R. Perera; Col. Moses W. Pettigrew (G-2); Comdr. Francis Bitter, USNR; Lt. Col. W. Barton Leach; Lt. Comdr. A. E. Hindmarsh, USNR; Fowler Hamilton (FEA); Edward S. Mason (OSS); Edward M. Earle, Thomas W. Lamont, Clark H. Minor, and Elihu Root, Jr. (special consultants).

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Combined Bomber Offensive.* On 23 March 1943 General Arnold directed the committee to prepare an "analysis of strategic targets in Japan," the destruction of which would knock that country out of the war.[97] Intelligence concerning Japanese industrial and military objectives was more meager than that for Germany, but the COA brought to its task a rich experience and a tested methodology. They brought also, inevitably, a point of view. In two respects their interpretation of their directive was significant. First, Arnold's "strategic targets" became in their report "economic objectives"—industries geared closely to the war effort—without reference to purely military installations. Second, where the directive referred to targets located in Japan, the COA accepted this to include production and processing areas in both the Inner and Outer Zones, and the sea and land routes connecting those areas.

Individual industries were assigned to subcommittees, which worked through spring and summer of 1943.[98] Plans for early use of the B-29 against Japan lent point to their studies and from September they were in touch with Wolfe and his staff.[99] Both Wolfe and Kuter's office utilized their preliminary findings; MATTERHORN followed their recommendations explicitly. The COA's final report was presented to Arnold and Kuter on 11 November as they headed for SEXTANT, and copies were sent on to the conference.[100]

In this report the COA described thirteen industries which did *not* "now appear profitable aviation target systems."[101] They listed six other preferred target systems: 1) *merchant shipping*, in harbors and at sea; 2) *steel production*, to be attacked through coke ovens; 3) *urban industrial areas*, vulnerable to incendiary attacks; 4) *aircraft plants;* 5) *anti-friction bearing industry*, highly concentrated in six main factories; 6) *electronics industry*, whose interruption would have immediate military effects.[102] Japanese industry was vulnerable in general as well as in the stipulated particulars since much of it was war-born, without a substantial civilian backlog and not yet at peak production. Any of the chosen industries might be knocked out by a heavy initial concentration of bomber effort and a follow-up persistent enough to prevent recuperation or substitution.

The COA listed target systems in the order given above but without intending thereby any order of preference; for sake of security they preferred ambiguity in this respect. But in regard to the steel in-

* See Vol. II, 349–70.

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dustry their judgment had been strongly registered: "The timing of the war against Japan justifies attack upon industries lying relatively deep in the structure of war production. When limitations of time do not require exclusive concentration upon immediate military effect, the most serious long-term damage can be inflicted by disrupting the production of basic materials like steel." Two-thirds of all Japanese steel was produced from coke coming from a limited number of ovens, highly frangible and highly concentrated in Kyushu, Manchuria, and Korea. Hence the COA had said: "Those coke ovens are the prime economic targets. They should be attacked as soon as the forces necessary to destroy them in rapid succession become available."[103]

From Chengtu the B-29 could not reach Tokyo or the other industrial cities of Honshu. The main coke-oven concentrations, however, were well within tactical radius and hence the MATTERHORN planners, committed to the west China base, had found in this implied priority for the steel industry a rationale for their plan. The COA had approached their problem without any great concern for the time element; the subsequent decision of the CCS to speed up the Japanese war now raised questions as to the practical value of such a long-term objective as steel.

That at any rate was the judgment of JWPC, charged with determining the best timing and deployment, as well as employment, of the B-29. In this task, they had to consider military as well as economic targets, and the tactical problems involved—bases, base defense, logistics, aircraft performance—which the COA had deliberatedly ignored. Again in December, as in the previous month, JWPC turned to the Joint Intelligence Committee for a preliminary study, and again received a report unfavorable to MATTERHORN.[104] The JIC declared against any long-term economic objectives in favor of antishipping strikes which by forcing the Japanese to retire to the Inner Zone would affect both their industrial and military potentials. After shipping, the steel and petroleum industries (they incorrectly accused the COA of neglecting the latter) were the most vital economic targets. As to base areas, they rated Chengtu the worst, the Marianas the best. Until those islands could be won and developed, interim operations could best be conducted out of Darwin, Broome, and Port Moresby against merchant shipping and petroleum refineries. Chengtu might be used later if supply and defense difficulties could be overcome.

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Following this report in the main, JWPC on 24 January recommended to the Joint Planning Staff the following disposition of VHB groups: the first four groups to go to the Southwest Pacific; then four to Chengtu; then twelve groups to the Marianas, which were to have an overriding priority when operational; then two groups to the Aleutians and two to be held in reserve.[105] Within the JPS, opinion was divided.[106] The naval member was inclined to support the JWPC report, the air member—Brig. Gen. Haywood S. Hansell, Jr.—to oppose it. Hansell thought JWPC had made insufficient use of the COA report and had neglected to consider some possible base areas (Kweilin, Kunming, Ceylon). Performance data accepted by JWPC did not agree with that furnished by B-29 project officers.[107] On 9 February the JPS, on Hansell's request, sent the paper to JWPC for revision.[108]

The paper was returned on 15 February without significant change in tone.[109] Balancing all factors, JWPC still believed that the best use of the B-29 prior to deployment in the Marianas would be first from Australia bases against shipping and oil, and that its employment from China bases against coke ovens and shipping would be a poor second. Recognizing the priority which the JCS and the President had given to Chengtu, they did so reluctantly and with the warning "that it should be emphasized, however, that the implementation of MATTERHORN first is not in consonance with conclusions reached from the detailed studies."

The Joint Planners adhered more closely to Hansell's ideas in the report they sent to the JCS on 2 March.[110] They reversed the order of preference for initial target systems, listing coke ovens before POL installations. Because of decisions "at highest level," they recommended that MATTERHORN get the first eight groups. None were to be deployed in the Southwest Pacific, but units stationed at Calcutta were to stage through Ceylon to hit refineries in Sumatra. Twelve groups would be assigned to the Marianas; then perhaps two to the Aleutians, and two to other regions—Luzon, Formosa, or Siberia.

Continued resistance to MATTERHORN within inter-service intelligence and planning agencies reflected a wider current of opposition. The one point of agreement among most persons concerned was that the Marianas, when available, would provide the best base area. It was the interim use of B-29's which they debated, and the several proposals made represented varying opinions as to the broad strategy

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of the Japanese war. JWPC, in holding out for operations from Australia, reflected what was essentially a Navy point of view. Attrition of shipping and oil supplies, and the bombing of such strongpoints as Truk, Yap, and Palau, would facilitate the Navy's westward move through the Central Pacific. Those tactics would aid as well MacArthur's drive from the Southwest Pacific—indeed, they resembled closely the plan for B-29 operations which Kenny had suggested in October 1943.* In supporting MATTERHORN, AAF Headquarters had found that plan, in spite of its admitted flaws, intrinsically preferable to alternative proposals. Shipping they recognized as a vitally important target, but not as a proper B-29 objective. The plane and its equipment had been designed for high-altitude bombardment. The B-17 and B-24 had enjoyed but indifferent success in high-level attacks on Pacific shipping, and to use the B-29 for a job which a dive bomber or B-25 could do better did not seem economical. AAF doctrines of strategic bombing called for attacks against the enemy's economy at home; only from China bases could that be done in early 1944, and in the last analysis that was the reason for the AAF's continued support of MATTERHORN. That was the air planners' way of winning the war, and they were content to leave to Nimitz and MacArthur blockade and island-hopping.

At the end of January the Chief of the Air Staff felt there was enough evidence of "a widespread effort to discredit MATTERHORN" to warrant a "counter-offensive" in the form of memos to Roosevelt and Marshall.[111] Diversion of B-29's from MATTERHORN would require presidential sanction, but in early 1944 plans for the Japanese war were still in a state of flux. The schedule of operations adopted at SEXTANT had been kept flexible to allow for possible short cuts. The assault on Saipan, listed for October—after Ponape and Truk—might be stepped up; if so, B-29's might be diverted from CBI to help in winning their own bases. In February dissident views on Pacific strategy and the role of the B-29 were aired in conferences at Washington, at Honolulu, and at Brisbane.† General MacArthur wanted all currently operational B-29's for the Southwest Pacific and was inclined to question the wisdom of their initial use from the Marianas.[112] Lt. Gen. Robert C. Richardson[113] in Honolulu believed that only a few groups could be stationed on those islands. The

* See above, pp. 12–13.
† See Vol. IV, 550–53.

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Navy was still undecided whether to turn northward to the Marianas or go on directly island by island to meet MacArthur at Mindanao.[114] On 15 February General Hansell presented to the Joint Chiefs the AAF's concept of the Pacific war, stressing the importance of the Marianas and the bomber offensive which could be conducted therefrom.[115] Meanwhile, the role of the B-29 was discussed in a conference at the White House on the 11th, and again on the 19th.[116]

Finally on 12 March the JCS arrived at a firm decision on Pacific operations.[117] Forces in the Pacific Ocean Areas (POA) would bypass Truk, seize the Marianas, and advance via the Carolines and Palaus to join SWPA forces in an assult on Mindanao on 15 November. D-day for Saipan in the Marianas was set at 15 June. This schedule, by advancing sharply the operational date of the best VHB base, offered a final solution for assignment of B-29 units. MATTERHORN stood, but cumulative delays in the United States and in the CBI made it clear that the May target date set at SEXTANT could not be met, and with Saipan airfields operational by early autumn the problem of "interim employment" shrank in importance. When Pacific commanders were notified of changes in their directives, MacArthur (Nimitz concurring) reduced his previous request for *all* operational B-29's to a mere thirty-five with which to strike oil refineries in the NEI.[118] That request too was refused; instead, Calcutta-based B-29's would stage through Ceylon to hit Palembang, Sumatra's great petroleum center.[119]

MATTERHORN as well as SOWESPAC felt the impact of the new strategy. After tinkering with the JPS paper of 2 March, the Joint Chiefs passed it to the Joint Strategic Survey Committee for review.[120] On that committee's recommendation, JPS again revised their plan to fit the new Pacific schedule: the MATTERHORN force should be cut to the 58th Wing's four groups (just beginning their flight to India); the second wing should be sent to the Marianas, which should be reinforced, as units and bases became available, to a total of ten or twelve groups. On 10 April the Joint Chiefs informally approved the plan. This time, it was for keeps.[121]

And it was high time. A full year had passed since Arnold had set up the B-29 Special Project and had told Wolfe to get the B-29 ready for combat. Already the first B-29's had landed in India, where Wolfe had long preceded them to ready his fields and gather his supplies against the first mission. The diversion of his second wing to Saipan

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meant of course that his plan could not be fully implemented; moreover, there was already an indication that the 58th Wing might not be permanently stationed in the CBI.

With these last-minute changes in plans AAF Headquarters was well content. The political purpose, always an important factor in MATTERHORN, might still be served by the 58th Wing. Missions out of China would test the B-29 and the organization using it while hitting something of a blow at Japanese economy. By fall, Saipan bases, easily supplied and within tactical radius of Tokyo, might well supplant Chengtu completely. The reassignment of units from the CBI theater to the Pacific Ocean Areas could readily be effected by means of the unusual command structure for B-29 units embodied in the Twentieth Air Force. The problem of control of the B-29 force had appeared, explicitly or implicitly, in discussions of deployment, and the final solution bade fair to eliminate such protracted debates in the future.

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CHAPTER 2

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THE TWENTIETH AIR FORCE

THE plan adopted by the Joint Chiefs of Staff on 10 April 1944 was to remain, in spite of subsequent modifications, the basic guide for the strategic bombardment of Japan. It is a bulky document, about as long with its appendixes as an average mystery novel and less quickly read. Much of its content was devoted to problems of command and control. The Joint Chiefs hoped to provide operational control by establishing the Twentieth Air Force under command principles radically different from those governing the other Army air forces. Whether the method would prove feasible, experience only would show; there were not a few who expressed grave doubts. Feasible or not, the special command system was to affect the history of the VLR force so importantly in both its operational and administrative aspects that it is useful to describe here the processes by which that system came into being. For convenience the story has been broken into three parts. The first deals with the establishment of the Twentieth Air Force. The second tells how the XX Bomber Command was fitted into the CBI structure. The third is devoted to the organization and training of the 58th Bombardment Wing (VH), the whole of the bomber command's combat force. This order exactly reverses that of the dates of activation of the organizations, but here it seems better to follow military protocol by coming down the chain of command, rather than the chronological sequence. Actually, the three stories are so interdependent that any division is artificial, though perhaps helpful in the exposition.

The Strategic Air Force

During the first two years of the war, command procedures for Army air forces in the several theaters had taken on a standardized

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pattern. Under prevailing doctrines of unity of command, air units were assigned to a theater commander working under broad directives from the Joint or Combined Chiefs of Staff. Those units were organized into a theater air force, usually bearing a numerical designation and divided into the conventional commands—fighter, bomber, air service, etc. Though the theater commander enjoyed control of air (as of ground) forces in carrying out his broad mission without interference from Washington, he usually had learned to delegate to his air force commander a wide latitude in the choice of means by which air power might be used. The system, if not perfect, had proved eminently satisfactory in tactical air operations. Strategic air operations seemed to pose certain special problems, and it was in an attempt to solve them that the Twentieth Air Force was set up.

Neither the problems nor the solution were wholly novel. The problems indeed were inherent in the very nature of strategic bombardment. Its mission might be relatively detached from the current campaign on the ground; diversion of forces to help that campaign would interfere with the mission. Strategic operations were usually at long range and theater boundaries might cramp the flexibility necessary for such a program. These problems, with their implications, had been recognized by the British during World War I, when in the spring of 1918 they had developed the first articulated program for long-range bombardment. In May of that year Sir William Weir, Secretary of State for the RAF, had said:

> Long- and extreme-range bombing machines for operations by day and night, utilized against targets outside the range of machines designed for [tactical] functions, involve for their efficient utilization operational considerations of a purely aerial character, and require for their conception and execution a large measure of freedom and independence from other military schemes.[1]

The practical solution was the Independent Force, RAF, directly responsible to the Air Ministry and wholly outside the control of Field Marshal Haig, Commander in Chief of the British Armies in France. In the last month of the war this principle had been extended by an agreement to form an Inter-Allied Independent Air Force.*

In World War II the British had adopted a comparable arrangement whereby the Chiefs of Staff Committee directed the RAF Bomber Command's campaign against German industries. When the Eighth Air Force joined its efforts with those of Bomber Command,

* See Vol. I, 15–16, 37.

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it had fitted naturally into this system, since the European theater was one of "prime strategic responsibility" for the British. This arrangement was formally recognized after the issuance of the Casablanca Directive on 21 January 1943, which put the Combined Bomber Offensive under direct control of the CCS with Sir Charles Portal, Chief of Air Staff, as its executive agent.*

Had the earliest B-29 units been assigned to the ETO, there is no reason to doubt that they would have operated under the same command structure as the B-17 and B-24 groups. Instead, the B-29 was dedicated entirely to the war against Japan. Neither in Asia nor the Pacific was there unity of command. Rivalries within the CBI and between Nimitz and MacArthur would make it difficult to shift a VHB force from one command to another, and the flexibility of the B-29 might be compromised by hemming it within the artificial boundaries of a single theater. None of the theater commanders—Nimitz, MacArthur, Stilwell—had shown himself an enthusiastic advocate of the type of mission for which the B-29 was being prepared, and it was not unnatural that the AAF should be reluctant to assign permanently to those leaders its most potent bomber.

In his postwar memoirs General Arnold stated that during his tour of the Pacific in the autumn of 1942 he decided to retain command of the B-29, but reluctantly: "There was nothing else I could do, with no unity of command in the Pacific." "It was," he continued, "something I did not want to do."[2] With the heavy pressure of his various offices, Arnold may well have been loath to take on another heavy responsibility. Yet there was another side of the picture. In World War I, in spite of strenuous efforts to get an overseas assignment, Arnold had been held to an administrative post in Washington. Now, in the second war, he had seen contemporaries and the younger men he had raised go out to combat commands, and he would have been unlike his kind if he had no regrets in commanding the world's largest air force without being able to direct a single bomber mission. A headquarters air force would give him at least a role comparable to that of his British opposite number, Portal, and one might suspect that his reluctance was tempered with some satisfaction. At any rate, the formal papers which tell of the Twentieth Air Force bear no trace of demur on Arnold's part.

If Arnold conceived the idea of the headquarters force in the au-

* See Vol. I, 306–07.

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tumn of 1942, it lay dormant for nearly a year. His latest air plan (AWPD/42, 9 September 1942) contemplated using the B-29 in the ETO within the existing command structure.* In the following summer, when it seemed probable that the earliest VHB units would be deployed in the CBI, plans emanating from that theater and from AAF Headquarters carried no hint of an unusual arrangement for control. It was only when Arnold's planners began to consider future deployment of B-29's in the Pacific areas as well as in the CBI that the idea of an independent strategic air force appeared in staff discussions. In a plan dated 16 September 1943 which anticipated the use of VHB bases in the CBI, Marianas, Aleutians, Luzon, and Formosa, the Air Staff advanced what was to become the standard AAF formula. The simultaneous use of widely scattered bases would demand careful coordination of attacks, and

> such integration of timing and effort, fully capitalizing upon the mobility of aircraft, requires a cohesive overall control of strategic air operations, free of the direction of local areas and subject only to the Joint or Combined Chiefs of Staff.[3]

The choice between the Joint and Combined Chiefs was not an easy one to make. Precedent for the latter could be found in their control of the Combined Bomber Offensive in Europe. The VHB force would be wholly American, and in Pacific areas administration, supply, and defense would be provided wholly by U.S. commanders who reported to the JCS. But for units based in the CBI, those functions would come under the general purview of British commanders, and the British members of the CCS would have therein a legitimate interest. Further, the Combined Chiefs were responsible for the general strategy of the war and for allocation of forces and materiel, so that any project which threatened to disrupt existing strategy might naturally come under their administrative, if not tactical, control. In this dilemma, the AAF early favored the policy of keeping the VLR project wholly under U.S. control, turning to the CCS only for directives instructing British commanders to make available such facilities and services as were needed.[4] This policy the JCS accepted in principle, and when in November they asked their British counterparts for aid in establishing VHB airfields in India, there was no suggestion of CCS control.[5]

After the approval of MATTERHORN at Cairo, the Joint Chiefs

* See above, pp. 10–11.

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found it necessary to provide some machinery whereby it might exercise direction of B-29 units in the CBI and later those in the Pacific. The AAF staff favored the establishment of a "Headquarters Strategic Air Force." This would be not unlike the GHQ Air Force of 1935–41,* with the JCS substituted for General Headquarters; presumably, administrative control would fall to the AAF member of the Joint Chiefs. Within the Washington planning agencies this idea was opposed by those officers, chiefly from the Navy, who were attempting to block the MATTERHORN project.[6] The issue was carried to the White House. There in conferences on 11 and 19 February it was decided, with Roosevelt's approval, that control of VLR forces would be retained in Washington under the JCS; Arnold, as Commanding General, AAF would exercise "executive direction" for the committee.[7] But in this matter, as in deployment, formal action lagged far behind initial approval by the President.

The Joint Planning Staff, engaged in mid-February in revising its paper on optimum use of VLR bombers, incorporated in that plan the suggested control by the Joint Chiefs, but in the version presented on 2 March there was no reference to Arnold's executive functions.[8] Arnold suggested the addition of a paragraph defining his responsibilities according to the White House agreement, and Admiral King proposed that the idea of "control" might be rendered more precisely by substituting "strategic deployment and the designation of missions," with the theater commander being vested with responsibility for local coordination.[9] The JPS accepted King's amendment, but again made no reference to Arnold as executive agent; instead, they stated merely that he should be authorized "to communicate directly with VLR forces in the field for purposes of coordinating their operations,"[10] a policy dictated by a current issue in the CBI.† This redaction of the JPS paper the Joint Strategic Survey Committee approved, subject to certain addenda including one requested by the British Chiefs of Staff —that theater commanders might in an emergency divert the VHB's from their primary mission.[11]

The report of the JSSC came before the Joint Chiefs on 28 March. Admiral Leahy recommended its approval, but General Arnold offered as an alternative certain proposals made by Admiral King. King had advocated, he said, the creation of "an air force, known as the

* See Vol. I, 31–32, 48–51.
† See below, pp. 43–52.

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Joint Chiefs of Staff Air Force, to be commanded by the Commanding General, Army Air Forces, who will be the executive agent of the Joint Chiefs of Staff." The JCS would determine the employment and deployment of the force, charging their agent with responsibility for logistical support, administration, and transfers. This was unequivocal. Arnold would command the force, acting under specific directives which he, as a member of the JCS, would help to frame. The proposal was accepted informally by the Joint Chiefs, who asked their planners to put King's ideas into proper form.[12] Actually it was AC/AS, Plans who drew up the statement on command relations, and this the JPS included in its final revision.[13] In view of the Navy's attitude toward strategic bombardment in general and the MATTERHORN project in particular, Admiral King's advocacy of the AAF view in this issue is difficult to explain; but the record is as precise as the motives are uncertain.

Accepted by the Joint Chiefs on 10 April, the new paper on command constituted the formal charter under which the Twentieth Air Force operated. These were, in essence, its terms: 1) a strategic Army air force, designated the Twentieth, was to be established, to operate directly under the JCS with the Commanding General, AAF as executive agent to implement their directives for the employment of VLR bombers; 2) major decisions concerning deployment, missions, and target objectives were to be made by the JCS and executed by the Commanding General, AAF; 3) should a strategic or tactical emergency arise, theater or area commanders might utilize VLR bombers for purposes other than the primary mission, immediately informing the JCS; 4) responsibility for providing suitable bases and base defense would rest with theater or area commanders as directed by the JCS; 5) to obviate confusion in the field, the JCS would vest theater or area commanders with logistical obligations for Twentieth Air Force units operating from their commands, with the responsibility of establishing equitable and uniform administrative policies, and with the duty of providing local coordination to avoid conflicts between theater forces operating under general directives of the JCS and VLR forces operating under their special directives; 6) JCS directives for VLR operations would be so framed as to minimize possible friction within theaters; and 7) Arnold was to have direct communication with VLR leaders in the field, advising appropriate theater commanders of communications thus exchanged.[14]

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Already the AAF had begun to fill in the details of the proposed plan. Early in March AC/AS, Plans had set up in the Pentagon an Operations Section, U.S. Strategic Air Force; like other offices connected with the B-29 project, it was on a secret basis.[15] The director was Col. Cecil E. Combs, a heavy bombardment officer who had fought against the Japanese in the Philippines, the Southwest Pacific, and the CBI. After the JCS action of 28 March, the Air Staff rapidly worked out a more formal organization. On 4 April the Twentieth Air Force was constituted and ordered activated in Washington.[16] Arnold was named commander, and each member of his staff was designated to perform his normal role for the Twentieth as well as for the Army Air Forces.

Obviously neither Arnold nor his staff members could devote to the new organization the requisite amount of time and energy. The actual working staff of the new air force was made up of a group of deputies. As chief of staff Arnold named Brig. Gen. H. S. Hansell, Jr., currently Deputy Chief of Air Staff and Acting AC/AS, Plans. Hansell had served a tour as commander of the 1st Bombardment Wing in England but was best known as a planner and as one of the most articulate exponents of strategic bombardment in the AAF. He had contributed importantly to the series of over-all air plans, which began with AWPD/1, and had served on joint and combined planning staffs in the ETO and in Washington.* He had played an important part in shaping the MATTERHORN plan and in steering it through the joint agencies, and his choice was indicative of the sort of operations which Arnold had in mind for the B-29's. Hansell held his first staff meeting on 12 April and began the difficult task, with the help of the AAF's Management Control, of developing an organization for which no exact precedent could be found. Liaison was established immediately with the two other services through representatives of OPD and the Navy in recognition of the Joint Chiefs' over-all control.[17] But it was Hansell (with Combs as his deputy for operations) who would run the show—Hansell, vice Arnold, vice the JCS. The new air force would retain a secret classification until the public announcement of the first attack on Japan on 15 June.

Whether the device of a headquarters air force would work remained to be seen. Certainly the tangled command system in the CBI

* On his earlier career, see Vols. I and II, *passim.*

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—where the first B-29 had landed on 2 April—would provide an acid test for the remote-control system. Some features of the system had, in fact, been dictated by practical issues which had already arisen between U.S. and British leaders in India,* and it was from the CBI that the wisdom of the new arrangement was first challenged. The issue turned on Joint Chiefs' control rather than on the idea of a headquarters force. In the early negotiations the British seem to have accepted without demur the propriety of JCS control of VHB operations. After the establishment of the Twentieth Air Force, however, British policy changed. Current difficulty in fitting the B-29 force into SEAC command channels may have justified some anxiety on the part of the British; more important were Mountbatten's views on strategy in Asia and the concern of the British Chiefs of Staff with future plans for strategic bombardment of Japan.

The JCS advised Stilwell on 3 April of the decision to establish the Twentieth Air Force.[18] On the 19th they described its peculiar command system to the CCS and offered a draft message for the British members to dispatch to SACSEA.[19] A month later the British chiefs replied, raising certain questions relative to control of VHB units within British theaters of responsibility. Because of problems currently involved and because of their intention to assign RAF units to the bomber offensive against Japan after V-E Day, they proposed modification of the new command system: Arnold would still control all VLR aircraft (including eventually those of the RAF) but under CCS rather than JCS directives. His role would thus be analogous to that of Portal in respect to the Combined Bomber Offensive against Germany.[20]

Asked to report on this proposal, the Joint Planning Staff found it not to their liking. Conditions in the war against Japan differed from those in Europe, where the RAF had long borne the brunt of the bomber offensive and where even yet their forces were comparable to those of the AAF. Current plans called for the deployment in the CBI of only four VHB groups. All others—about twenty-five groups by summer 1945 and forty-nine eventually—would go to areas controlled solely by U.S. commanders. The British would not allocate RAF units for the strategic bombardment of Japan until mid-1945, and not possessing a bomber with VLR characteristics, they could not reach the Inner Zone from bases now in prospect. If they turned to-

* See below, pp. 43–52.

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ward Malaya and Singapore, as seemed likely, strategic bombardment in the Far East might never be "combined" in the sense understood in the ETO.[21]

Following this negative report, the Joint Chiefs on 31 May declined the British proposal. With the four B-29 groups in India already fitted into the CBI organization and all subsequent units designated for the Pacific, no early change seemed necessary. The JCS, in short, thought that command of VLR units should be left to them "until such time as British VLR forces are in fact allocated for employment against Japan, at which time this question of control of the Strategic Air Force (VLR) should again be examined."[22] There the matter rested, to be revived only as the war against Germany dragged to a close; actually, this decision was to insure U.S. control of all VLR operations until the Japanese surrender.

XX Bomber Command and the CBI

The XX Bomber Command was activated at Salina, Kansas, on 27 November 1943. At Cairo the MATTERHORN plan was then under consideration; its previous indorsement by Roosevelt augured approval, which meant that the new command would go to the CBI. The internal organization of the command had been determined in part by that probability, involving as it did combat operations by a complex and untried bomber in a theater where logistical conditions were exceedingly difficult. By the time the Twentieth Air Force was established, XX Bomber Command had been mortised into the CBI organization, but only after long debates. Foreseen in part, the difficulties in adjustment had helped determine the command principles under which the headquarters air force would work. Earlier agreement was made difficult by the tactical concept of MATTERHORN and by conditions in the CBI. The China-Burma-India theater was huge, great in land mass and housing the largest civilian population of any theater. Distances were formidable, communications slow. Armed forces of three Allies were fighting a common foe but with inadequate forces and indifferent success. Material weakness was aggravated by radical differences between the several Allies in war aims, in temperament, and in the make-up of forces; principles of unity of command and of integral national forces, commonly accepted in other theaters, were hard to apply.

According to MATTERHORN, B-29 units would base in India,

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bomb from China. A foundation for such an arrangement existed already in an American command in China-Burma-India under Lt. Gen. Joseph W. Stilwell. Like most commanders in the theater Stilwell held several offices. He was chief of staff to Generalissimo Chiang Kai-shek, Supreme Commander in China, and deputy to Louis, Lord Mountbatten, Supreme Allied Commander, Southeast Asia. As Commanding General, U.S. Army Forces in CBI, Stilwell had to bridge a psychological barrier between his two allies as formidable as the physical barrier of the Himalayas.

The Chinese were without representation in the CCS; the Generalissimo tried to make good that deficiency by approaching Roosevelt directly with scant regard for military channels. Chiang Kai-shek's obvious military objective was to drive the Japanese out of China, but that task was complicated by concern with maintaining his political party in power and by fear of Communists in the north. The British were interested only incidentally in China's efforts to expel the enemy. Their chief objectives were to protect India from Japanese invasion and from civil discord among the natives, to reconquer Burma and Malaya, and to regain in the Far East prestige lost through successive defeats by the Japanese. British operations in 1942–43 had lacked aggressiveness; improvement was hindered by the non-cooperation of native India and a complicated chain of command dividing forces between British Army Headquarters, India, and SACSEA. Little love was lost between the Chinese, suspicious of Britain's political aims, and the British in India with their traditional contempt for a "native" army.

Stilwell's mission was to keep China in the war as an active ally and as a potential base for future large-scale operations against the Japanese homeland. This involved equipping, supplying, and training the Chinese army rather than committing large U.S. combat forces. After the Japanese cut the Burma Road, China could be supplied only by an LOC stretching from Calcutta to Kunming. In 1943 supply over the last link in this route, Assam to China, was entirely by air transport, and protection of the airlift was the prime function of AAF units in the CBI. As an auxiliary, the Ledo Road was being pushed with high priorities, and ground operations planned for northern Burma were to serve both the air and the ground route. Hence it was that Stilwell, by training and temperament an exponent of ground warfare, headed an American command consisting largely of air and service forces. His primary mission lay in China; India was for him only a terminus for

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his LOC, Burma the site of its route. Yet his chief personal interest seemed to be in the reconquest of Burma.

The theater's two Army air forces—the Tenth in India and the Fourteenth in China—had as a common mission defense of the air route to China and of the bases at either end. Together their meager forces were hardly sufficient for even an average air force, but separation had been dictated by different policies followed in China and in India. Stilwell as the Generalissimo's chief of staff commanded Chinese troops as well as U.S. forces. Chennault commanded the Fourteenth Air Force under Stilwell but was air adviser to Chiang Kai-shek and commander of the Chinese Air Force. Relations between the two Americans were more often strained than cordial; Stilwell was suspicious of the close rapport, fruit of Chennault's long service with the Chungking government, between his air general and the Generalissimo. In Washington, AAF Headquarters was loath unreservedly to commit a VHB force to Stilwell with his preoccupation with the Ledo Road, or to Chennault because of his special position vis-à-vis Chiang Kai-shek.

The situation in India was no happier. Southeast Asia Command, created at the QUADRANT conference in August 1943, was supposedly modeled after the Allied command structure which had proved so successful in the Mediterranean. Mountbatten, as Supreme Allied Commander, had an American (Stilwell) as deputy and in the subordinate combined commands (air, ground, naval) a comparable alternation of British and U.S. commanders was followed. In spite of the fact that U.S. air forces were more active in SEAC than the RAF and were destined to become more numerous, Mountbatten had named as his air commander Air Chief Marshal Sir Richard Peirse. Because the mission of the AAF in India differed so sharply from that of the RAF, Mountbatten's control, through Peirse, of all air operations was not wholly satisfactory to the Americans.

The creation of SEAC had brought a reorganization of Army air forces in Asia. On 20 August 1943, the AAF India-Burma Sector (IBS), CBI was activated at New Delhi under Maj. Gen. George E. Stratemeyer, senior AAF officer in the theater. By virtue of this office Stratemeyer controlled directly (but under Mountbatten and Peirse) the Tenth Air Force and X Air Service Command. As air adviser to Stilwell, Stratemeyer had certain responsibilities which lay outside SACSEA's jurisdiction: supply and maintenance for the Fourteenth Air Force, training of Chinese pilots at Karachi, coordinating

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activities of the ATC's India-China Wing (whose command channels ran straight to Washington), and protecting the wing's over-the-Hump haul. In spite of valiant efforts on the part of Stratemeyer (known throughout the AAF as a skilled diplomat), the new scheme had not worked smoothly. Now the proposal to base VHB's in India and operate them from China threatened further to confuse a command setup which Arnold, in a rare bit of understatement, had described to Stratemeyer as "somewhat complicated."[23] Stratemeyer, learning that MATTERHORN's needs would be subordinated to scheduled operations in Burma, was anxious that the CCS should establish some definite policy which would insure sound logistical support for the B-29's, whatever might be done about their operational control.[24] It is only when viewed against this background of tangled commands and divided interests that the difficulties involved in establishing the XX Bomber Command in the CBI can be appreciated.

The MATTERHORN plan had stipulated that administrative control of B-29 units should be vested in the Commanding General, AAF IBS (Stratemeyer), and that operational control and security of advanced bases should devolve upon the Commanding General, Fourteenth Air Force (Chennault).[25] Whether the omission of any reference to Stratemeyer's relation to SACSEA was deliberate or not, it accorded with AAF Headquarters sentiment and reflected Stratemeyer's concern lest MATTERHORN suffer from SACSEA's other interests.[26] MATTERHORN's approval had been qualified by the provision that it not interfere with "planned operations," which would include those in Mountbatten's area. At SEXTANT the interested leaders (Marshall, Arnold, Portal, Mountbatten) attempted to clarify the air command in SEAC, and on his return to India Mountbatten established the Eastern Air Command. This gave Stratemeyer command over an integrated AAF-RAF operational force (Tenth Air Force and Bengal Air Command), but his channels still ran through Peirse to Mountbatten.[27]

In describing this latest reorganization to the Chief of Air Staff (Maj. Gen. Barney McK. Giles), Stratemeyer wrote on 15 December:

> We are most anxious to know what decisions were finally made [at SEXTANT] as to who will control Twilight [MATTERHORN]. Lord Louis naturally takes the position that any operations based in India must come under his Command. I am still hoping, however, that General Arnold can sustain the position that Twilight should be an all American show.[28]

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Mountbatten must have realized after SEXTANT, if not before, that he would have no operational control over the B-29's. His concern rather was with administration and with coordinating VLR operations with those of his own air forces. The establishment of Eastern Air Command did little to clarify the picture. Stratemeyer held that the planning and executing of VLR missions fell outside the purview of Mountbatten's air commander, Peirse. Peirse agreed, so far as missions from China were concerned, but insisted that "the actual building up, expansion and operation of any Air Force within the South East Asia area must initially, under our Allied Air Command, fall to be my responsibility."[29] A normal assumption under existing command principles, Peirse's declaration was negated by decisions made outside the CBI.

At Cairo the command system advocated in the original MATTERHORN plan had not been acceptable. By that time the utility of maintaining control of all VHB units under the JCS had become apparent, and on 5 January Marshall advised Stilwell of a new arrangement currently under consideration.[30] Because VLR operations would involve both SEAC and China, XX Bomber Command would not be assigned to either—in fact, it would not be assigned permanently to any theater. The force would operate under general direction of the JCS, and Stilwell would exercise direct command and control, utilizing facilities of the Tenth and Fourteenth Air Forces in fulfilling his directives.

After consulting with Stratemeyer, Chennault, and his own deputy, Maj. Gen. Daniel I. Sultan, Stilwell reported that the scheme was feasible if difficult. He proposed to delegate direct command and control to his air adviser, Stratemeyer, and to charge Chennault, through Stratemeyer, with responsibility for fighter defense of staging areas, for fighter escort on China-based missions, and for airdrome construction and supply in China. For missions in SEAC, Stratemeyer would furnish escort by Tenth Air Force fighters.[31] With Stilwell's concurrence thus registered, the JCS on 18 January informally accepted the proposed command system; Marshall's cable of 5 January became, in effect, Stilwell's directive.[32]

On 13 January Brig. Gen. Kenneth B. Wolfe arrived at New Delhi with the advanced echelon of his XX Bomber Command staff. After he had conferred there with Stratemeyer but before he had seen Stilwell, Rear Echelon Headquarters, USAF CBI issued over the latter's

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name General Order No. 13, 30 January 1944, describing the command setup for XX Bomber Command: under general directives of the JCS, Stilwell would enjoy direct command and control, but would delegate his authority to Stratemeyer as air adviser.[33] Stratemeyer was authorized to make needed arrangements with the appropriate headquarters, and he immediately issued a directive to Chennault regarding the initial B-29 missions and the methods of administration and supply to be followed.[34]

Stratemeyer wrote Arnold on 3 February that "entirely satisfactory" meetings between Wolfe, Chennault, Stilwell, and himself had resulted in a complete mutual understanding of their respective responsibilities for the VHB force.[35] Chennault, however, was not entirely satisfied. He had written on 26 January to Arnold, "as a member of the JCS," an unfavorable critique of MATTERHORN; the proper coordination of tactical (Fourteenth Air Force) and strategic (XX Bomber Command) operations and logistics could be assured, he said, only by establishing a "unified air command to consist of all Air Forces and supporting services operating in China."[36] Chennault neglected to nominate a commander, but the inference was obvious.

General Arnold liked neither the idea nor the approach, which had skipped a couple of echelons in the normal channel of communications and which was bolstered apparently by an appeal via the Generalissimo. Arnold indorsed the letter in his own hand: "Gen. Kuter. This looks like another one of Chennault's independent thoughts and ideas —with no coordination with Hdqr. He has already expressed these sentiments to CKS who sent them here. H.H.A." But before Washington could answer Chennault, his relations to XX Bomber Command were re-stated in the theater.

On 11 February Wolfe arrived at Stilwell's advanced headquarters in the north Burma jungles. There, on the following day, Stilwell rescinded the directive of 30 January issued without his approval, substituting instead General Order No. 16, which was flown out by Wolfe and promulgated at New Delhi on 15 February.[37] In the new directive, Stilwell charged Stratemeyer, as Commanding General, AAF IBS, with responsibility for logistics and administration of XX Bomber Command; after consulting Wolfe, he was to make recommendations for VLR missions in SEAC. Chennault had responsibility for fighter defense of B-29 bases in China and for complete support of XX Bomber Command there; after consulting Wolfe, Chennault

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was to make recommendations to Stilwell through Stratemeyer (this time as air adviser) for B-29 missions from China. In essence, Stilwell, not Stratemeyer, would exercise operational control and would coordinate the activities of the two theater sectors. Washington was apprised of the new arrangement and apparently found it acceptable.[38] No notice was sent to Mountbatten.

Mountbatten had left Cairo before the final action on MATTERHORN was taken. When the Tehran decisions had negated earlier SEXTANT agreements concerning the CBI, alternative suggestions had been debated: whether to continue large-scale operations in Burma without BUCCANEER, or to concentrate on augmenting Hump tonnage to the end that a major air effort, particularly by B-29's, might be made from China bases. A choice between those alternatives had been deferred pending opinions from SACSEA and Chungking.[39] Mountbatten was inclined toward the latter plan, wishing to curtail north Burma operations and to carry the Ledo Road ("out of step with global strategy") only to Myitkyina. For 1944 he favored putting all possible resources at the disposal of the Fourteenth and of MATTERHORN; later he would move southeastward toward Sumatra, utilizing B-29's in the campaign.[40] For reasons not pertinent here, these suggestions could not be accepted in full; what is of immediate concern is Mountbatten's interest in the B-29's.

At New Delhi, in conference with Wolfe and Stratemeyer, he had suggested that XX Bomber Command perform long-range reconnaissance in SEAC and strike missions against Bangkok.[41] Such operations were not mentioned in Marshall's radio of 5 January—in fact, despite the obvious interest of Mountbatten and Peirse in the B-29 force, there was no mention of SACSEA in that message, in Stilwell's reply of 9 January, or in the two general orders emanating from the latter's headquarters. Nor had any of those documents been formally presented to SACSEA. The desire to keep MATTERHORN "an all American show" was natural; failure to consult the Supreme Allied Commander was impolitic.

Receiving belatedly—on 26 February—a copy of General Order No. 16, Lord Mountbatten was disgruntled at not having been consulted before its issue and perturbed at its silence concerning SACSEA. In a signal to the British Chiefs of Staff he quoted the order in full, deplored Stilwell's neglect, and suggested certain modifications.[42] He argued that the JCS, commanding all VHB units, should

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issue mission directives simultaneously to the theater commander of the B-29's (Stilwell) and the commanders (currently, Chiang Kai-shek and Mountbatten) of those theaters in which they would base, over which they would fly, and in which they would bomb. Stilwell would coordinate and issue mission orders. Local fighter defense would fall to the pertinent theater commander; in SEAC this would be delegated to the Commanding General, EAC (Stratemeyer) through Peirse. Since Stratemeyer was Stilwell's air adviser, this would leave operational control of B-29's in SEAC in one hand.

The average civilian, American or British, might have found this a little confusing; the military did not. Marshall was informed by the theater of the contents of this cable on the same day and two days later, on 28 February, the British Chiefs of Staff referred the message, with their indorsement, to the CCS.[43] Sir Charles Portal seconded the formal statement with a personal plea to General Arnold, who gave assurance of the AAF's desire "to arrange for smooth coordination."[44] On the heels of Portal's message came a radio from General Kuter who, momentarily in New Delhi, had talked with Mountbatten and Stratemeyer.[45] Kuter referred to the serious oversight of the JCS in not having provided SACSEA with a copy of their 5 January directive to Stilwell and suggested an apology; in the future, Mountbatten would be satisfied with information copies of all directives and orders to XX Bomber Command. Pending formal action by his associates in the JCS, Arnold radioed Stilwell on 6 March, expressing regrets for the oversight and promising for Mountbatten copies of future action papers.[46] He added, though, that the JCS were currently revising their directive to Stilwell and gave the resumé of its contents.

These incidents, recorded in a matter-of-fact manner and read literally, may give the impression of a squabble over protocol. Certainly protocol was involved, but to planners in Washington the misunderstandings had a graver significance: they pointed up the difficulty of coordinating B-29 operations in the CBI under the existing command structure and with the personalities involved. Thus recent experiences in that theater seemed to confirm the decision made at the White House in mid-February and must have influenced the Joint Planners, when on 2 March they recommended that control of VHB units "be retained directly under the Joint Chiefs of Staff."[47] This proposal differed sharply from the 5 January cable which recited that XX Bomber Command should operate under the *general* directives of the JCS and the *direct* command and control of Stilwell.

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The new directive for Stilwell, of which he was advised tentatively on 6 March, had been framed by the AAF in consonance with the new JPS paper. Stilwell would command the U.S. Strategic Air Forces (VLR) in his theater, running missions under the operational control of the JCS. He would coordinate operations in China with Chennault, operations in or from SEAC with Mountbatten. In case of unresolvable conflicts, Stilwell and Mountbatten would appeal to the U.S. and British Chiefs of Staff respectively. Defense responsibilities would devolve upon Stilwell in China, upon Mountbatten in SEAC, and the former would render maximum logistical support to the VLR project. The final warning: the JCS might move B-29 units from the theater at any time. With old-world courtesy, the AAF included a draft apology to Louis, Lord Mountbatten.[48] The JCS approved the directive on 7 March, passing it on to the Combined Chiefs and to Stilwell.[49] This time he was requested to "have Stratemeyer keep Mountbatten informed."[50] Once bitten, twice shy. With minor revisions the CCS approved the new directive on 25 March, and Stilwell—and Mountbatten—were so informed.[51] Mountbatten received the new arrangement apparently with little enthusiasm. Both he and Peirse considered the "command and control set-up for VLR bombers unusual" (as did the JCS); they asked for information copies on all important decisions (which had been promised); and they requested, through Sultan, that Arnold "not send instructions to Wolfe direct" (which ran counter to current plans).[52]

The directive to Stilwell was again short-lived. The decision of the JCS on 28 March to set up a headquarters air force with Arnold as commander lessened the responsibilities of the theater commanders. After the Twentieth Air Force had been established, the Joint Chiefs on 19 April dispatched to Stilwell a new directive.[53] The XX Bomber Command was assigned to the Twentieth Air Force (and *not* to the CBI). All major decisions as to deployment, missions, and target objectives would be made by the JCS and executed by Arnold. Stilwell would coordinate B-29 missions with other operations in the CBI, consult with Mountbatten on missions affecting SEAC, and inform Chiang Kai-shek (to the extent that security would permit) of missions planned from China bases. Mountbatten would provide and defend bases in SEAC, Stilwell in China; the latter was responsible for logistic support in both sectors. In a tactical or strategic emergency, Stilwell might divert the B-29's from their primary mission, immediately informing the Joint Chiefs. As an afterthought, the office of

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Commander in Chief, India was added to that of SACSEA in appropriate passages.[54]

The directive thus included some provisions suggested by the British on 28 February but it disregarded Mountbatten's protest over channels of communication with Wolfe. Direct communications between Arnold and Wolfe were specifically authorized. The JCS informed their British counterparts of the new arrangement and asked that SACSEA and Commander in Chief, India be instructed to fulfill obligations stipulated for them.[55] It was this announcement which provoked the unsuccessful attempt of the British to shift control of the VHB's from the JCS to the CCS. The Joint Chiefs stood pat: the command system outlined in the radio of 19 April was that under which XX Bomber Command would begin its operations in June. The inclusion of Chiang Kai-shek among the "coordinators" reflected perhaps an effort by him which seemed to give further justification to the idea of the headquarters air force.

From purely military considerations there had been ample reason for Mountbatten's desire for a clear understanding of his responsibilities for logistics, coordination, and base defense: port and transportation priorities for the B-29 project would impinge on those for other planned operations, and as events had recently showed, Calcutta was not immune to Japanese air attack. But it seems probable that considerations of prestige were not wholly absent. The British had lost face in the oriental world, and if they were to regain their former ascendancy in southeast Asia, their efforts should not be overshadowed by that of the Americans. Command prerogatives were of more than military importance. This was true in China too. The choice of China as a staging area for the B-29's, it has been suggested,* was determined in part by the need of shoring-up the Chungking government. Chiang Kai-shek had accepted Roosevelt's offer to send the Superforts to China and was cooperating—at no financial loss, to put it conservatively—in providing the required bases. He had supported Chennault's effort to have the B-29's put under a "unified air command" in China. Now in April pressure from the Japanese in east China led Chennault to suggest to Stilwell that MATTERHORN's air transport allocation be temporarily diverted to the Fourteenth and, in an emergency, the diversion of "all MATTERHORN's resources to tactical rather than strategic purposes." The B-29's would hit enemy bases in China, not industry in the home islands.[56]

* See above, pp. 13–15, 17, 24–25.

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A few days later, Stilwell advised Marshall that the Generalissimo was insisting that he himself command the VLR project in China, just as he commanded (as Supreme Commander in China) the Fourteenth Air Force. Stilwell believed that this demand was motivated by Chiang Kai-shek's concern over face and that it might be countered by an explanation of the peculiar nature of the JCS air force. Marshall passed this information on to Roosevelt, who cabled Chiang Kai-shek on 12 April:[57] the President would command the force from Washington; the Generalissimo would have the responsibility for coordinating VLR missions with other operations in the theater in which he was Supreme Commander, and would accordingly be informed of the pertinent directives from Washington. This removed any possible slight by placing Chiang Kai-shek on the same plane as Mountbatten, and apparently mollified the Generalissimo. There is no reason to suppose, however, that the remote-control system was liked by Chiang Kai-shek and his air adviser—or for that matter by most of the ranking officers in the theater. They might have asked, as the French general had in 1918 when told of the plans for an independent bomber force, "Independent of whom—of God?" The Twentieth's chain of command did not run that high, but it had jumped some important brass in a theater where personalities counted heavily.

There were, of course, wholly impersonal reasons for suspecting the new system. What may be called the theater point of view had changed little since the invention of the telegraph had allowed distant headquarters (or governments) to interfere directly with the details of a military campaign. The Crimean War of 1854–56 was the first war fought under such circumstances, and an American military observer thus reported the results:

> The electric telegraph was another novelty in the art of war, first used in this memorable siege [of Sevastopol]. It was used for communicating the wants of the armies to their respective governments and was so far useful. For conveying the orders of the governments to their respective commanders (if I attach any weight to the opinion of officers at the seat of war), its advantage was somewhat questionable. By it orders were sometimes given that more circumstancial information, only to be gained in sight of the enemy, would have shown to be highly inexpedient.[58]

This, roughly, was the theater point of view. The JCS had built an unusually fine record of commanding through general directives, leaving the theater commander to work out the details. The headquarters air force would depart from that practice: in the crucial details of

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target selection and mission directives full control would remain in Washington. Only the emergency clause in Stilwell's general directive left to him any chance of operational control over a bombardment force for which he had administrative and logistical responsibility. The tactical situation in China promised to provide soon an emergency which would threaten the whole MATTERHORN plan.

XX Bomber Command and the 58th Bombardment Wing (VH)

As plans for the employment and control of the VHB's were debated by the Allied leaders, the combat force which was to carry the air war to the Inner Empire slowly assumed form. By the time the Twentieth Air Force was established on 4 April 1944, its striking force, XX Bomber Command, had been organized, trained, and dispatched overseas—its units then being strung out in either direction between Salina in Kansas and Chengtu in China. MATTERHORN planners had originally conceived of two B-29 combat wings, the first to begin operations from the Calcutta area in spring 1944, the second in September. The Joint Chiefs on 10 April diverted the latter, in anticipation, to the Marianas, and the combat story of MATTERHORN becomes thereafter the story of the 58th Bombardment Wing (VH), whose first B-29 had landed at Kharagpur only a few days before. At that time the B-29 project which had fostered the 58th was about a year old, and one year—to the day—elapsed between the establishment of the wing at Marietta, Georgia, on 15 June 1943 and its first strike at the Japanese homeland. Successive delays in production and modification, natural enough with a new and complex airplane, had caused cumulative delays in training and deployment. Like many another AAF force, XX Bomber Command had to complete its training and weld its organization in the theater of operations.

In an earlier passage it has been shown how the need for a VLR bomber had encouraged the AAF to adopt the unusual procedure of ordering large numbers of B-29's before the plane had ever flown.* By combining the resources of Boeing, Bell, Fisher Body, Martin, Wright, and other firms, production experts had worked out a schedule which promised to deliver 150 B-29's during 1943. The fatal crash of 18 February 1943 threatened to retard the schedule seriously, but

* See above, pp. 6–7.

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General Arnold immediately established on an exempt status the B-29 Special Project, naming Brig. Gen. Kenneth B. Wolfe, B-29 expert from Wright Field, as its head and directing him simply to "take necessary action to commit the B-29 airplane to combat without delay."[59] This was an order to build a strategic bombing force around an airplane then represented by two experimental models powered by a new and untried engine.

Current schedules suggested that B-29's would not be available for training purposes before late summer.[60] Wolfe thought that if production held up it would be possible to build his organization and conduct training and service testing concurrently. This would be a gamble—a "calculated risk" in more formal military parlance—but of a piece with the whole B-29 program. Arnold had given the project high priorities, including what amounted to a *carte blanche* for personnel needs. Wolfe stripped his office at Wright Field of key officers to man his technical staff, taking along as his deputy his leading B-29 expert, Col. Leonard F. Harman. To direct the training program, he secured as A-3 Brig. Gen. LaVerne G. ("Blondie") Saunders, who had commanded the 11th Bombardment Group in the battle for Guadalcanal.[61] Part of the technical staff went out to Seattle to test the XB-29.[62] By 7 May Wolfe had evolved and Washington had accepted a tentative organization to utilize the first 150 planes. His scheme called for a bombardment wing which would include four combat groups and a fifth group to remain behind as an OTU when the others moved out. Of 452 combat crews to be trained, 262 would be assigned to this original wing (providing double crews for each plane and initial reserves) and 190 would be used for replacements and OTU's.[63] To implement the plan, the AAF directed the Second Air Force to assign certain designated units.[64] During May, Wolfe consulted with the Second Air Force, the Technical Training Command, and other agencies in an effort to determine training needs and methods for B-29 specialists.[65]

On 1 June 1943 the 58th Bombardment Wing (VH) was activated; on the 15th it was established at Marietta Army Air Field (near Bell's B-29 factory), where General Wolfe assumed command on the 21st.[66] The Second Air Force provided four training fields in the general vicinity of Salina, Kansas—in the heart of a flat, rich wheat country and close to Boeing's Wichita factory, whence would come most of the 1943 Superforts. Wing headquarters was transferred from Mari-

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etta to Salina on 15 September, some of the groups having already moved into the Kansas area, and within a few weeks the 58th Wing had taken on a definite, if imperfect, form. It was not an orderly process. Delay in adopting tables of organization added somewhat to the confusion caused by the frequent assignment and reassignment of units and individuals and by housing shortages.[67]

Originally under control of AAF Headquarters at Washington, the 58th Wing was reassigned on 11 October to the Second Air Force, which had supplied much of the wing's combat personnel and which was to continue the B-29 unit training program after the 58th went overseas.[68] The last important change in organization grew out of Wolfe's operational plan and its variant, MATTERHORN, based on the deployment of two VHB wings in the CBI. On 27 November XX Bomber Command was activated at Salina with Wolfe as commander.[69] He carried over into his new headquarters part of his staff, leaving his deputy, Colonel Harman, to command the 58th—now called, as were all the combat units, Very Heavy instead of Heavy. At the same time the 73d Bombardment Wing (VH) with four constituent groups was activated.* The 73d, designed to absorb the second increment of 150 B-29's, grew slowly; diverted in April from

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Unit	*Commander*	*Location*
XX Bomber Command	Brig. Gen. Kenneth B. Wolfe	Smoky Hill Army Air Field, Salina, Kansas
58th Bombardment Wing (VH)	Col. Leonard F. Harman	Smoky Hill Army Air Field, Salina, Kansas
468th Bombardment Group (VH)	Col. Howard E. Engler	Smoky Hill Army Air Field, Salina, Kansas
472d Bombardment Group (VH)†		Smoky Hill Army Air Field, Salina, Kansas
40th Bombardment Group (VH)	Col. Lewis R. Parkes	Pratt Army Air Field, Pratt, Kansas
444th Bombardment Group (VH)	Col. Alva L. Harvey	Great Bend Army Air Field, Great Bend, Kansas
462d Bombardment Group (VH)	Col. Richard H. Carmichael	Walker Army Air Field, Victoria, Kansas
73d Bombardment Wing (VH)	Col. Thomas H. Chapman	Smoky Hill Army Air Field, Salina, Kansas
497th, 498th, 499th, 500th Bombardment Groups (VH)	In process of activation	

† To remain behind as an OTU.

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MATTERHORN to a force intended for the Marianas, that wing passes out of the present story.[70]

By 13 January the tables of organization for the combat units had finally been authorized. The aim had been to make the command as nearly independent of outside agencies as possible, a sort of air task force which could operate under relatively primitive conditions with a minimum of help from the theater. The force would consist of a bomber command headquarters, a wing headquarters, and four groups each containing four bombardment and four maintenance squadrons —the latter comprising the ground echelons of the combat squadrons organized separately for greater elasticity. The assignment of double crews with members capable of performing first and second echelon maintenance was to comply with the system of rear and advanced bases called for in MATTERHORN. The composition of the crew was long under discussion with various suggested teams ranging from ten to fourteen men, eleven finally being adopted: pilot-commander, co-pilot, two navigator-bombardiers, flight engineer (all officers); engine mechanic, electrical specialist, power-plant specialist, central fire-control specialist (these last four trained in gunnery); radio and radar operators. Command headquarters and each group had a photo-laboratory. Aircraft were assigned at the rate of 7 per squadron, 28 per group, a total of 112 for the wing. The use of double crews with 5 officers each gave the wing an unusually high percentage of commissioned personnel—3,045 officers with 8 warrant officers and 8,099 enlisted men.[71] Because of the desire to make the command as self-sufficient as possible, there was need to provide service units to perform third and fourth echelon maintenance and housekeeping services. These, with the aviation engineer units temporarily assigned for construction of the India airfields, brought XX Bomber Command on its arrival overseas to something over 20,000 officers and men.

While the B-29 force was thus rounding out its organization, training had been carried out under difficulties stemming from the novelty of the project and the emphasis on haste. For some types of ground units, standard AAF training procedures were satisfactory, but for all B-29 specialties, courses had to be cut to pattern. Scheduled to go out to India by water in a two-month voyage, ground echelons had to leave early in the new year, but as late as 21 December there was a shortage of 40 per cent in authorized maintenance personnel. While the numerical deficiencies were rapidly made good, current tasks and

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preparations for overseas movement interfered with programs to the degree that training would have to continue on shipboard and in India.[72]

For flight echelons the problem was more complex. Instructors had to be trained before they in turn could initiate crews into the intricacies of the B-29. As a nucleus for his training staff Wolfe was authorized to procure twenty-five pilots and twenty-five navigators with high qualifications and with experience in long over-water flights in four-engine planes.[73] The chief difficulty lay in the dearth of planes. The first XB-29 was turned over to the AAF just as the 58th Wing was activated, and it was August before the first production model flew into Marietta for modification. Service testing was conducted in Kansas during September as the combat groups settled into place; by 7 October flight characteristics of the B-29 had been approved by Wolfe's experts, and a number of key pilots had been checked out.[74] Meanwhile, training directives had been prepared and crews had begun their transition work—but not in B-29's. First some fifty B-26's were used, then B-17's, a better substitute for the larger Boeing plane.[75] Delays in production of aircraft and engines, which had held up deliveries of the Superforts, had practically disappeared by the end of 1943, but modifications were numerous and time-consuming (especially installation of a four-gun turret). For want of trained maintenance personnel, an unusually high percentage of planes remained out of service. When XX Bomber Command was established on 27 November, there was only one B-29 for each twelve crews; a month later the crews had flown only an average of eighteen B-29 hours and half an hour in B-29 formations. Only sixty-seven first pilots had then been checked out.[76] In recognition of these conditions, the number of crews to be trained was cut back to 240 and the date of completion was advanced from 1 February to 1 March.[77] During January there was some improvement; practically all the ground school work was completed and most of the scheduled flying in B-17's. But by the end of the month, when by the original plan the program should have been completed, no more than half the required B-29 flying had been done, and in certain phases—high-altitude formation flying, long-range simulated missions, gunnery and central fire-control practice—the wing's accomplishments were negligible.[78]

The delays in production and modification which hampered flight training also made it impossible to ship out at the expected time. By

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mid-February the situation at Salina had become critical, and General Arnold sent out from Washington a "PQ Project" team to get the B-29's ready for overseas flight and combat. Eventually Maj. Gen. Bennett E. Meyers, whose personal conduct was later to bring embarrassment to the AAF but who was then an effective trouble-shooter, assumed charge of the task force of representatives from various contracting firms and AAF agencies and GI and civilian mechanics. The project, carried out during the tail-end of a hard winter, was known locally as "the Kansas Blitz"; it was a fitting send-off for men headed for Bengal's heat. With this unavoidable extension of the stay in Kansas, ambitious training requirements were readjusted to suit the needs of individual groups and, as modified, were achieved by the beginning of March. Partly modified aircraft were delivered to the squadrons during February, and the squadrons themselves spent much time in effecting engine changes and certain modifications. To secure the other modifications needed for combat, regular crews ferried their planes from one center to another, thus piling up flying time.[79] At the time of their belated departure for India the combat units still had much to learn about their untried plane, but even so they had an experience level higher than that of the average group shipping overseas. And, for reasons which lay outside the ken of XX Bomber Command, there would be no little time for training in the theater before the first mission was run.

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CHAPTER 3

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MATTERHORN LOGISTICS

THE MATTERHORN plan reflected the predominant interest in strategic bombardment that existed in AAF Headquarters. Essentially it was an effort to introduce into the Japanese war the objectives and techniques of the Combined Bomber Offensive in Europe: so to batter the industrial fabric of an enemy nation by long-range bombardment that armed resistance would be enfeebled. The circumstances under which the new campaign would be conducted, however, contrasted sharply with those in Europe.

In the ETO the heavy bombers of the Eighth and Fifteenth Air Forces were opposed by a determined and relentless enemy, but they operated under material conditions that were, for wartime, quite favorable. In the United Kingdom the Eighth's bases had been built by the British—of materials, by methods, and to standards comparable to those of the AAF. Supply and maintenance depots were large and lavishly equipped. Supply routes, both within the British Isles and from the United States, were as highly developed as any in the world. True, submarines menaced the sea lanes, port facilities still bore the marks of the Luftwaffe's blitz, railways were choked with munitions, materials and civilian labor were short; but the communications network was a going concern, and the CBO enjoyed a high priority in most logistical matters. There was no serious shortage of fuel, few long-term shortages on any items in production, and bases were by field standards luxurious. In Italy base development did not begin until autumn 1943, but the use of Italian Air Force facilities sped the task. And in Italy, as in England, Army air forces enjoyed the inestimable advantages of working in an industrialized community.

In the CBI most of these advantages were lacking. Bases had to be

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made to order for the B-29's. Ideally, they should have been built from locally available materials and by native manpower, but in India both U.S. Army engineers and U.S. materials had to be used to supplement local resources. Supply and maintenance installations were understocked and overworked; there was little industrial organization upon which the AAF could draw. Supply lines to the United States and United Kingdom were excessively long, the CBI's shipping priorities low, and supply lines within the theater were unequal to current demands and incapable of rapid expansion. All in all, it did not seem the ideal theater, logistically, in which to shake down an untried, complex, and gluttonous bomber.

Those difficulties were realized by the Washington planners (though not as keenly as by officers in the theater) and had deliberately been accepted for want of a better base area within reach of the Japanese homeland and because of Roosevelt's desire to bolster Chinese morale. The President's concern placed an emphasis on speed, but as delays, many unavoidable or unpredictable, pyramided, the time schedule formulated in the autumn of 1943 was not even approximated. By June 1944 the bases and essential installations were in operation, the supply system was functioning in its own complicated way, and XX Bomber Command was ready for its first mission. But this belated readiness had been accomplished only by scrapping some of the essential features of the MATTERHORN logistics plan, and it was already evident that further compromises would be necessary to support a sustained bombardment campaign.

The Bases

Theater officers had begun in August 1943 an on-the-spot investigation of potential base sites in India and China. Their tentative choices and their estimates of CBI capabilities in airfield construction served as practical guides for the Washington planners. Basic assumptions were: 1) that airfields could be built in China without recourse to American aid other than financial support and technical advice; 2) that in India it would be profitable to bring up to B-29 specifications airdromes already in existence or being built; and 3) that the India bases could be built on schedule only by importing certain materials and using U.S. Army construction units with their organizational equipment, as well as local labor. Under these conditions, it would require one U.S. aviation engineer battalion four months to

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complete each India base; the Chinese could build two fields in two months, four in four months, five in six months.[1]

Because of Roosevelt's desire for an early D-day, preliminary arrangements were initiated and completed before the CCS had given their belated sanction to the VLR project in the final report at the Cairo conference. On 10 November, one day after he had informally approved MATTERHORN, the President informed Churchill and Chiang Kai-shek of the plan and asked for aid in securing the necessary airfields. Both leaders responded promptly and favorably.[2]

Responsibility for construction fell to General Stilwell, as U.S. commander in the CBI, and under him, to his ranking Services of Supply officer, Maj. Gen. W. E. R. Covell. To supervise the task in both theater sectors, the Air Engineer, Brig. Gen. S. C. Godfrey, was sent out from the States. Actual construction work was directed in India by Col. L. E. Seeman, in China by Lt. Col. W. I. Kennerson.[3] It was characteristic of CBI operations in general that in spite of the unified command provided by Covell's office, the two base areas were developed separately and by methods which differed sharply.

Southern Bengal had been chosen as the rear base area for reasons acceptable to all: its position vis-à-vis China, relative security from attack, the port facilities of Calcutta, and rail and road communications that were good by Indian standards. In the territory surrounding Midnapore, some seventy miles west of Calcutta and on the edge of the rolling alluvial plain of the Ganges, Eastern Air Command had laid out twenty-seven airdromes and twenty-three satellite strips, each designed to accommodate two squadrons of B-24's; by extending and strengthening the 6,000-foot runways of some of these fields, CBI engineers hoped to make them serviceable for B-29's.[4] A TWILIGHT Committee headed by Brig. Gen. Robert C. Oliver of ASC made a preliminary survey of the EAC dromes and on 17 November tentatively designated for early development as B-29 fields the following: Bishnupur, Piardoba, Kharagpur, Kalaikunda, and Chakulia. This choice was approved by an advance party of XX Bomber Command staff, except that Dudhkundi was substituted for Bishnupur.[5] General Wolfe inspected the sites in mid-December and picked Kharagpur as his headquarters. Some sixty-five miles out of Calcutta on the main-line Bengal-Nagpur railway, Kharagpur was an important junction point, with a branch line that served most of the other proposed air base sites. The deciding factor was the existence at the adjacent village

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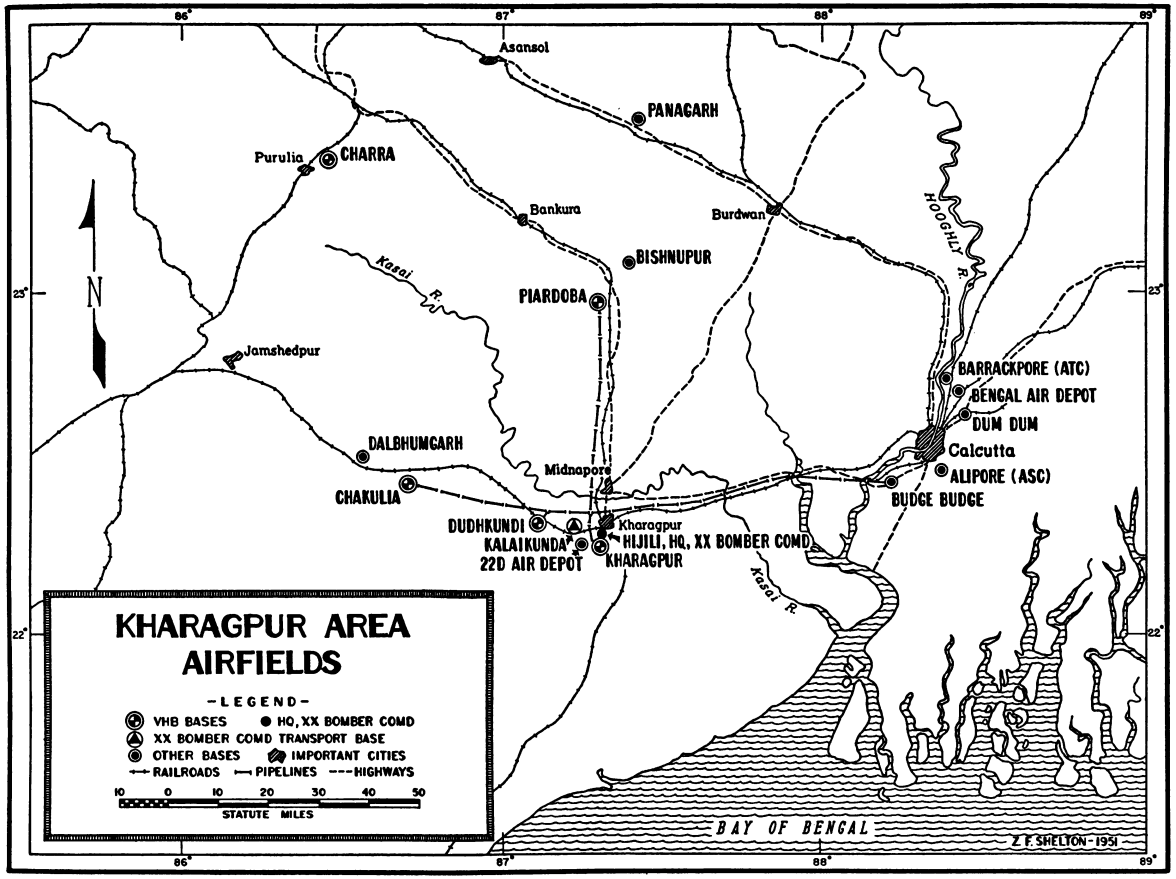

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of Hijili of a large new building (the Collectorate, designed as a political prison) which would house the bomber command's headquarters.[6]

Original plans, with an assumed deployment of two combat wings, had called for eight fields housing one B-29 group each and a ninth for transport planes. In January 1944 it was decided instead to build four fields with two-group capacity (fifty-six hardstands) at least as a temporary measure.[7] The decision in April to divert the second B-29 wing to the Marianas obviated the necessity of completing the additional fields. Meanwhile, delays in the building program had made it necessary to utilize temporarily one other B-24 airfield, Charra, where the existing runway was extended by two 900-foot steel mats. The permanent fields developed were Kharagpur, Chakulia, Piardoba, Dudhkundi, and Kalaikunda—the last as a transport base.[8]

General Godfrey in early November had set the requirements for U.S. construction units which had been written into the MATTERHORN plan: one aviation engineer regiment (less three battalions) for administration, four regular and one airborne aviation engineer battalions, four dump-truck companies, and two petroleum distribution companies.[9] To meet the 1 April target date which AAF planners had set in answer to the President's urgency, those units should have been in place by the beginning of December. Since they had to go out from the United States, that was obviously impossible; even to have the fields operational by 1 May, the date finally accepted at SEXTANT, would require rapid action and some good fortune. On 13 November General Arnold recommended that the War Department divert certain designated construction units from previous assignments and ship them out on the 15 December convoy.[10] The JCS, en route to Cairo, approved Arnold's requisition for the units on 17 November, but added limitations which would scale down by about half the troops to be dispatched on 15 December.[11] On request, Stilwell reluctantly granted the necessary shipping priorities; the first increment of troops sailed on schedule, transshipped in North Africa in early January, and arrived in India in mid-February.[12] This was two months later than the original ideal estimate and a month later than had been hoped in November, and it was but half the required force.

Late in November responsible officers had begun preliminary work on the Bengal fields, with AAF casuals driving some 500 trucks bor-

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rowed from the China Defense Service and the Ledo Road.[13] General Stratemeyer proposed that two engineer battalions be borrowed from the Ledo Road until the expected units arrived from the States; about Christmas, however, he learned that these units would not arrive until February.[14] At SEXTANT, the provision that the B-29 project be conducted "without materially affecting other approved operations" had been interpreted to allow the temporary diversion of certain "resources" from the Ledo Road. These included the trucks but not engineer units. Stilwell, committed to the road-building both by his interpretation of his directive and by conviction, refused Stratemeyer's request but was willing to refer it to Washington.[15] General Marshall backed Stilwell's view, but when apprised of the CBI's pessimistic estimate of the construction schedule, was willing to indorse the theater's suggestion (acceptable to Stilwell and Mountbatten) that engineers assigned to July amphibious operations in SEAC be loaned to MATTERHORN. Marshall accordingly assigned to the latter on 13 January the 1888th Engineer Aviation Battalion, on orders to sail from the west coast early in February and due in India in April.[16]

This move offered no early relief; the JCS on 15 January had to inform their British counterparts of the lag in the schedule, and the AAF considered postponing the target date for the operation to 30 June.[17] In this emergency Stilwell reversed his earlier stand. On 16 January he consented to lend from the Ledo Road the 382d Engineer Construction Battalion (Separate), and the unit was moved by air to Kharagpur. Further, when the 853d Engineer Aviation Battalion arrived in India on 1 February, it also was reassigned to the B-29 project and sent to Chakulia. With this reinforcement, the project officers could hope to have two fields barely operational by 15 March; by using two auxiliary fields temporarily, they could accommodate the B-29's as they arrived.[18] When the units from the 15 December convoy came in during mid-February, they were assigned to the several fields: the skeletonized 930th Engineer Regiment to Kalaikunda; 1875th and 1877th Engineer Aviation Battalions to Dudhkundi and Chakulia, respectively; 879th Engineer Battalion (Airborne) to Piardoba.[19] That last unit, with its light equipment, was unsuited for heavy concrete work and was later reassigned, as were the two units on loan from Stilwell.[20]

In all, construction forces numbered some 6,000 U.S. troops and 27,000 Indian civilians,[21] the latter working under India's Central Pub-

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lic Works Department by contract. A complicated system of requisitioning and the traditional slowness of native methods required much "expediting" by the Americans, and until the U.S. engineers arrived, Colonel Seeman was essentially a liaison officer with the Anglo-Indian organization. There was some overlapping of tasks, but in general the natives did those jobs which could be accomplished by hand labor, the U.S. troops those requiring skilled labor and heavy machinery.

The first large task completed was installation of the pipeline system. This called for a six-inch line from Budge-Budge on the Hooghly River to Dudhkundi, with four-inch pipes to the four other fields and internal lines and steel tank storage for each. Light-weight "invasion" type pipe was used, but it was buried to avoid injury from accident or native curiosity. Four petroleum distribution companies did the work—the 700th, 707th, 708th, and 709th. Beginning the job on 15 January, those companies by 15 March had fuel flowing to the three fields then approximately ready to receive B-29's, and later they completed the whole circuit.[22]

Runway construction was a more considerable task. Grading for the strips accounted for more than half of the total of 1,700,000 cubic yards of earth moved on the project. In spite of urgent requests from the CBI, most units arrived without the heavy machinery needed for earth moving; some machinery was borrowed from the British and kept in service even after the unit equipment came.[23] Specifications called for extending the B-29 strips to 7,500 feet instead of the 8,500 feet designated by Washington.[24] New concrete pavement was ten inches thick, and old pavement had an additional seven inches poured on. Both chevron- and horseshoe-type hardstands were used, and eventually rectangular parking areas were paved. The British system of dispersal was abandoned in favor of a more concentrated layout.[25]

Ideally, the fields should have been built of local materials. Sand was available in streams near each field and coarse aggregate (gravel and crushed basalt) was found in the immediate neighborhood. Indian cement, however, was both scarce and inferior, and much imported U.S. cement had to be used. Concrete was produced locally by means varying in efficiency according to equipment on hand. On all the fields save Kalaikunda, which was paved in July after all heavy machinery arrived, concrete was spread by hand by native workers.[26]

Buildings on the several bases showed no little variety. The Collectorate, prize structure of the rear area, required extensive modifica-

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tion. Troops were under tents at first, but eventually were housed in hutments of native "basha" construction—hard earth or concrete floors, bamboo and plaster walls, thatch roofs. Administrative and technical buildings included basha, U.S. plywood prefabs, Nissens borrowed from the British, and some ex-Italian prefabs imported from Eritrea, bullet-marked and somewhat shopworn. MacComber shops with overhead traveling cranes and Butler hangars with steel frames and canvas covers proved useful but difficult to erect because of damage and loss of steel parts. Most of the utilities—water and electric systems—were installed by U.S. engineers.[27]

Fortnightly reports to Washington after February were apt to read "work progressing on schedule," a schedule, of course, far in arrears of early plans. Actually, the fields were not completed until September.[28] But, by using the B-24 field at Charra (until July), General Wolfe found it possible to receive and house his four combat groups as they flew in with their Superforts in April and May. The cost of the five bases is difficult to determine because of the several agencies involved; Colonel Seeman considered $20,000,000 an approximate estimate.[29]

That figure was modest in comparison with the cost of the fields in China, where indeed, finances proved the chief headache for the Americans. The advanced B-29 bases were situated in the neighborhood of Chengtu. Chennault had preferred Kweilin which was closer to industrial Japan, but Stilwell had estimated that fifty Chinese divisions would be needed for ground defense and Washington had named Chengtu because of its greater security.* Chengtu, capital of the province of Szechwan, was located about 200 miles northwest of Chungking and 400 miles from the Hump terminal at Kunming. An ancient city, a seat of commerce and of culture, Chengtu lay in the valley of the Min River. About 2,200 years ago a semimythological engineer, one Li Ping, had harnessed the river as it burst from the mountains northwest of the city and had diverted it into several large canals and a myriad of smaller ones. His ingenious irrigation system, still operated with due respects to beneficent deities, had made of the Min valley a sort of artificial delta of extraordinary fertility. The delta or plain, no more than 70 miles long and some 1,700 square miles in extent, supported a population of about 2,200 persons to the square mile. In many respects Chengtu was admirably suited for a base area.

* See above, p. 21.

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There were rugged mountains to the north and west, but the immediate vicinity was level enough, and weather was reasonably good for flying. But the fertility of the valley and its teeming population meant that airfields could be built only at the expense of some economic and social dislocation, and there were serious political implications as well.[30]

After Chiang Kai-shek had agreed to Roosevelt's proposal to build B-29 bases in China, engineers of General Oliver's TWILIGHT Committee surveyed the region and by 28 November had tentatively selected sites for five VHB fields.[31] These the Generalissimo approved provisionally on 16 December; he also approved, in principle, other sites which would lessen Chennault's objections to Chengtu: Niuchang, near Kunming, as a ferrying base and Kweilin and Suichwan in the east as staging fields. Within a fortnight the list for Chengtu had been modified somewhat to include Hsinching, Kiunglai, Kwanghan, Pengshan, Chungchingchow. Except for Kwanghan these sites had strips already. Availability of materials and labor and the relative amount of interference with the irrigation system were deciding factors.[32] In January XX Bomber Command staff officers, then Wolfe himself, approved the sites; later Chungchingchow was stricken from the list.[33]

Chennault, responsible for air defense, located the fighter fields at Fenghuangshan, Shwangliu, Pengchiachiang, and Kwanghan (at the bomber base) in the immediate neighborhood, and an outer arc of strips at Mienyang, Kienyang, and Suining.[34] Chennault pressed for the staging fields in the east in a letter written directly to Arnold who referred him back to Stilwell.[35] At Stilwell's request, Chiang finally consented to improve a number of B-24 fields for Superfort use: Chengkung and Luliang near Kunming; Kweilin, Li-Chia-Tsun, and Liuchow in Kwangsi province; Hsincheng and Suichwan in Kiangsi.[36] These plans were later interrupted by changes in the tactical situation; by November, only Luliang (usable) and Hsincheng (under construction) were still on the active list.[37] VHB operations were conducted, as had been planned in MATTERHORN, from Chengtu.

Chennault did not have enough engineers to furnish the supervision called for in the agreement with Chiang Kai-shek, but the AAF furnished the needed personnel on requisition—a few specialists who flew out with General Godfrey early in December and a larger party which arrived at the end of the month. Over-all supervision fell to

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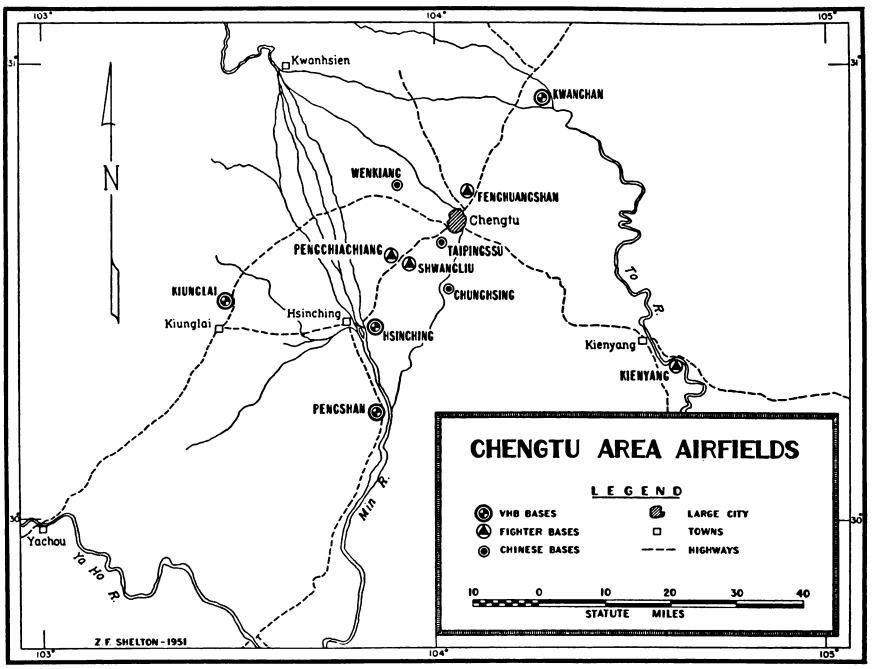
Chennault's chief engineer, Col. H. A. Byroade. One of Godfrey's party, Lt. Col. W. I. Kennerson, was in charge of U.S. engineers at Chengtu.[38] The Americans did the planning and supervision while Chinese engineers directed actual construction. Airfield construction in China was a responsibility of the Minister of Communications, American-educated Dr. Tseng Yang-fu, who delegated most of his task to the Deputy Commissioner of Engineering and to the Chief En-



gineer. A Chengtu office of the Chinese Engineering Office handled administrative and financial matters. Dr. Tseng Yang-fu selected the executive engineers, one for the whole project and one for each field. They came up from Kunming early in January, each bringing his own staff, some 300 in all. Few of them were experienced in airfield construction, but after briefing by Colonel Kennerson they were ready to take over.[39]

The labor problem was handled forthrightly and with little concern for the laborer. China's greatest source of strength lay in her inexhaustible reservoir of manpower—unskilled by western standards and wholly devoid of modern machinery but patient and sturdy and bound by a social organization that could be transferred directly to

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the new task. This great reservoir the Chungking government proposed to tap by the custom-hallowed process of conscripting farmers from the Min valley for the heavy construction work; housing was to be erected by more skilled contract labor. The project was to challenge credulity by the magnitude of the force involved. Western witnesses sought analogies in the building of the Great Wall of China or in Herodotus' account of the building of the great pyramid of Cheops. Tools and methods employed at Chengtu were not dissimilar from those used in the ancient works, but the time schedule was characteristically American.[40]

In early January the Chinese directors and Colonel Kennerson estimated the labor force required, setting the figure at 240,000.[41] The Governor of Szechwan drafted the men for 11 January; two weeks later something like 200,000 had appeared and work had begun on most fields.[42] In mid-February the governor agreed to draft 60,000 more men in an effort to catch up with the schedule, and in March 30,000 more for the fighter fields. To these 330,000 conscripts must be added 75,000 contract workers. Reports from various U.S. sources vary as to the total number of men who actually appeared, and it is doubtful that Chinese statistics were meticulously accurate, but with the inevitable turnover there may have been well more than a third of a million men on the job.[43] The story of Chengtu, wrote a correspondent, was "a saga of the nameless little people of China," for the fields were built by the "hand, muscle and goodwill . . . of 300,000 to 500,000 farmers."[44] They came from villages within a radius of 150 miles from Chengtu on the basis of 50 workers from each 100 households. On the job the coolies were organized into units of 200, still preserving something of the village structure; local officials kept the payrolls.[45]

An enterprise of such magnitude could hardly fail to effect a sharp economic and social reaction. Chengtu's geographical remoteness from the war was favorable, but there was as well psychological and political remoteness. Szechwan has been compared, whether accurately or not, with our own pre-Pearl Harbor midwest. Seemingly immune to Japanese attack, the province was isolationist, apathetic toward the war, and potentially antiforeign. Powerful local warlords looked on the MATTERHORN project as a scheme whereby the Chungking government could encroach upon their quasi-autonomy. Men of property feared, needlessly, that their lands would be confis-

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cated without recompense and, with more justification, that the project would aggravate the current inflation. Men of whatever class feared that the establishment of the airfields would bring Japanese bombers to Chengtu and that U.S. soldiers would be disorderly. The conscripts also knew that they were being torn away from home in the New Year holiday season and feared that they would not get back in time for the rice planting. Only the Chungking government, the politicians, and the contractors could hope to profit from the project.[46]

To most American officials, the attitude of the Chungking government did not seem too generous. The President had assured the Generalissimo on 10 November of American financial aid through lend-lease, but in the early negotiations no specific terms were suggested. In mid-December Chiang Kai-shek set the total cost of the fields at "over $2,000,000,000" Chinese National (CN) currency and asked Roosevelt for a guarantee of that amount.[47] This guarantee the President was willing to make, but his administration was interested in the rate of exchange. The current open (black market) rate was about $100 CN for $1 U.S. The Chinese government, as an anti-inflationary device, had set the rate arbitrarily at twenty to one. At the open rate, the cost of the fields would have been high, but "not unreasonable"; at the official rate, the cost would have been exorbitant.[48] Negotiation dragged on for several months. The U.S. Treasury and State Departments, interested in the broader problem of U.S.–Chinese financial relations, wished to adhere to the open rate. The War Department, though anxious to secure the fields at a reasonable cost, felt the pressure of time more keenly and was willing to compromise by accepting the twenty-to-one ratio but requiring the Chungking government to deposit $80 CN for each $20 CN advanced by the United States.[49] Chiang Kai-shek refused to compromise; holding fast to his demands, he began to point out that failure to agree to terms would delay construction.[50] To keep the project going, Stilwell had to guarantee payment of the sum demanded at a rate which was to be decided by subsequent negotiations.[51]

Negotiations were complicated by a number of factors. Funds in China were frozen, making it difficult to meet obligations at Chengtu. The Chinese Minister of Finance, Dr. H. H. Kung, insisted that there was an actual shortage of CN notes, and although U.S. officials thought there was a reserve of $10,000,000,000, it became necessary for ATC to fly in from India a supply of notes for immediate needs

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in Chengtu.[52] Two hundred million dollars in small bills bulks up; hauling Chinese money became, as one observer remarked, "definitely a factor in the tonnage operation over the Hump."[53] There was too the matter of financing the extra fighter defense fields chosen by Chennault and the proposed B-29 fields in the east and near Kunming. The War Department was willing to pay for the former out of MATTERHORN funds, not for the latter.[54] Finally, there was the matter of Chiang's demand at Cairo for a loan of one billion dollars CN. Stilwell ascribed the request to a desire for prestige and the Generalissimo's postwar plans rather than current needs, but refusal to grant it complicated the MATTERHORN deal.[55] Negotiations continued through the winter months and into the spring. The Chengtu project was kept going by occasional advances of currency without agreement as to ratio, but at times construction was handicapped by lack of ready funds.[56] By early March, estimates for the Chengtu fields (bomber and fighter) had risen to $4,450,000,000 CN, and the final figures were not far from this sum.[57] Final settlement was not reached until after conferences in July between Dr. Kung and Secretary of the Treasury Henry J. Morgenthau, Jr. A lump sum of $210,000,000 U.S. was finally paid to China, but this included other items as well as the Chengtu fields and an accurate breakdown is impossible to achieve.[58]

In spite of the tremendous cost, many Chinese suffered. Landowners did receive compensation for their fields, but not promptly and not at a favorable price. Inflation was increased by the project and with the depreciation of currency those who had to sell land at government prices lost.[59] The Governor of Szechwan set ceiling prices on materials used by the contract builders (some $400,000,000 CN were involved), but with only partial success.[60] The conscript workers suffered most—from the squeeze and from low pay. Paid on a piecework basis, they averaged perhaps about $25 CN per day, which with rising prices (by September the black market rate had risen to $270 CN for $1 U.S.) hardly sufficed for food, so that many workers had to be partly supported by their families.[61] Even with these difficulties the disorders feared by some did not occur. There was much grumbling and a few small riots, occasioned when overeager U.S. engineers moved in before the land had actually been purchased. But there was no general resistance on the part of the Szechwan citizens, and eventually they came to take some proprietary pride in the B-29 project.[62]

The four bomber strips were built to a length of about 8,500 feet

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and a thickness of about 19 inches, with 52 hardstands each. The fighter strips were approximately 4,000 by 150 feet, with a thickness varying from 8 to 12 inches and having 4 to 8 hardstands. The base course consisted of rounded rocks from streams set with gravel and sand, wet and rolled. The wearing course was a sort of native concrete called "slurry," a mixture of crushed rock, sand, clay, and water. Rolled and finished, this gave a texture and tensile strength not unlike adobe. The fields were literally "handmade." Materials were carried from nearby streams in buckets or baskets slung from yokes, in squeaky wooden-wheeled wheelbarrows, or infrequently in carts. Excavation was by hoes. Crushed rock was patiently beat out with little hammers and stones were laid individually by hand. Rollers were drawn by man (and woman) power, the slurry puddled in pits by barefoot men and boys.[63]

Work began on 24 January, when the first rice paddies were drained. At that time it was thought that two fields would be operationally complete by 31 March, two others by 30 April,[64] but the financial disputes and other difficulties retarded that schedule. On 24 April, three months to the day after the first paddy wall was breached, General LaVerne G. Saunders set down the first B-29 at Kwanghan.[65] By 1 May all four VHB fields were open to B-29 traffic,[66] and by 10 May all runways were finished and some fields were operationally complete.[67] The fighter fields had been finished somewhat more nearly on schedule.[68] In spite of the delays, the whole job excited the wonder and admiration of most Americans who saw it in process. And, in a fashion not always true in war, it was the man at the bottom who got most of the headlines, the man with the hoe and the complaining wheelbarrow. The historian of XX Bomber Command wrote: "The Chinese coolies—the John Q. Public of the Chengtu Plain—demonstrated effectively the best features of their nation."[69]

There was a third base area from which the B-29's were to operate, but there XX Bomber Command had no permanent installations. As a compromise with those strategists who had wanted to base the Superforts in Australia and bomb petroleum targets in the Netherlands East Indies, MATTERHORN planners had suggested that VLR missions could be staged out of Bengal against Palembang, Sumatra's chief oil center, by refueling in Ceylon. This suggestion was accepted at SEXTANT and the target date set at 20 July 1944.[70] At the conference the British reported on the airfield situation in Ceylon. Conventional

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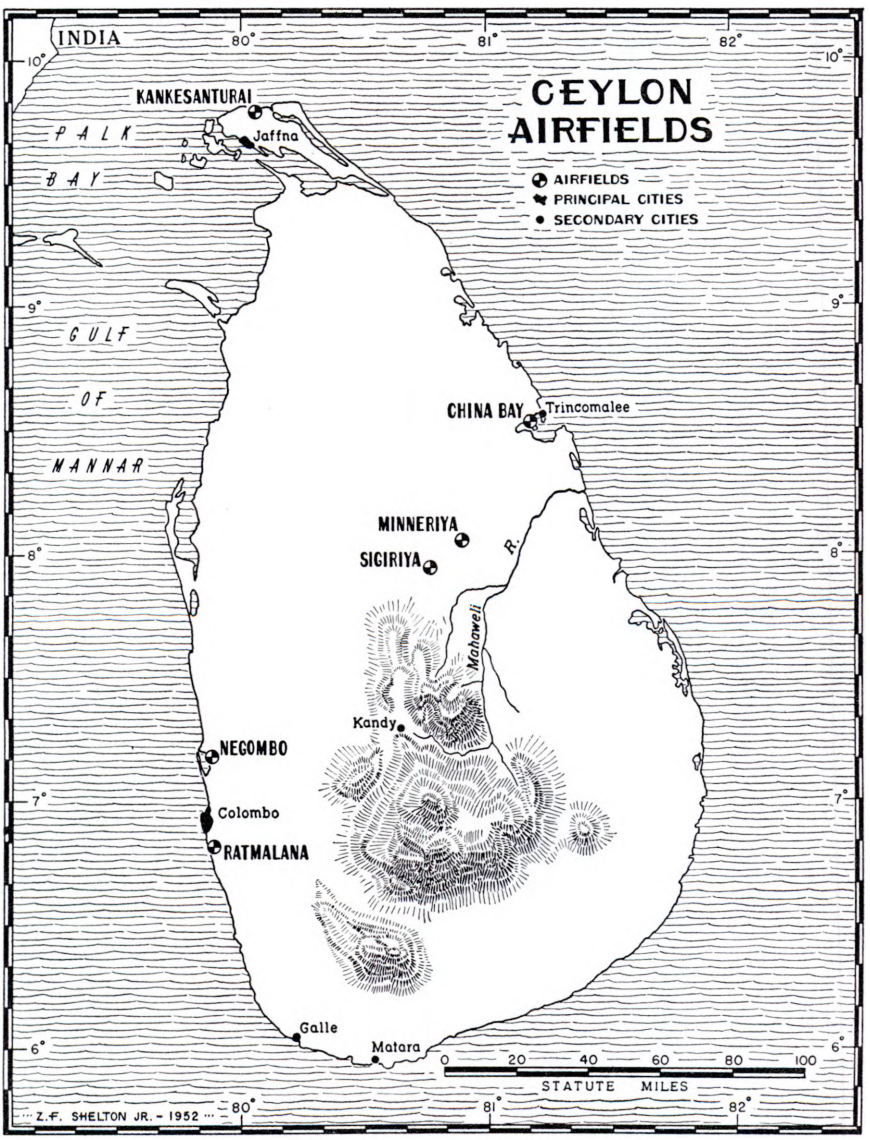
fields existed at Sigiriya, China Bay (Trincomalee), and Ratmalana; two others (at undesignated locations) under construction might be extended to B-29 specifications.[71] Only part of the large island of Cey-



lon lay within B-29 range of Palembang, and none of the fields named had been situated with that target in mind. Poor internal communications would make it difficult to build fields in the southeast, the area

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BUILDING THE CHENGTU AIRFIELDS

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MATTERHORN OPERATIONS

Above: Before the Yawata Mission *Below:* Attack on Mingaladon Cantonment Area, Rangoon

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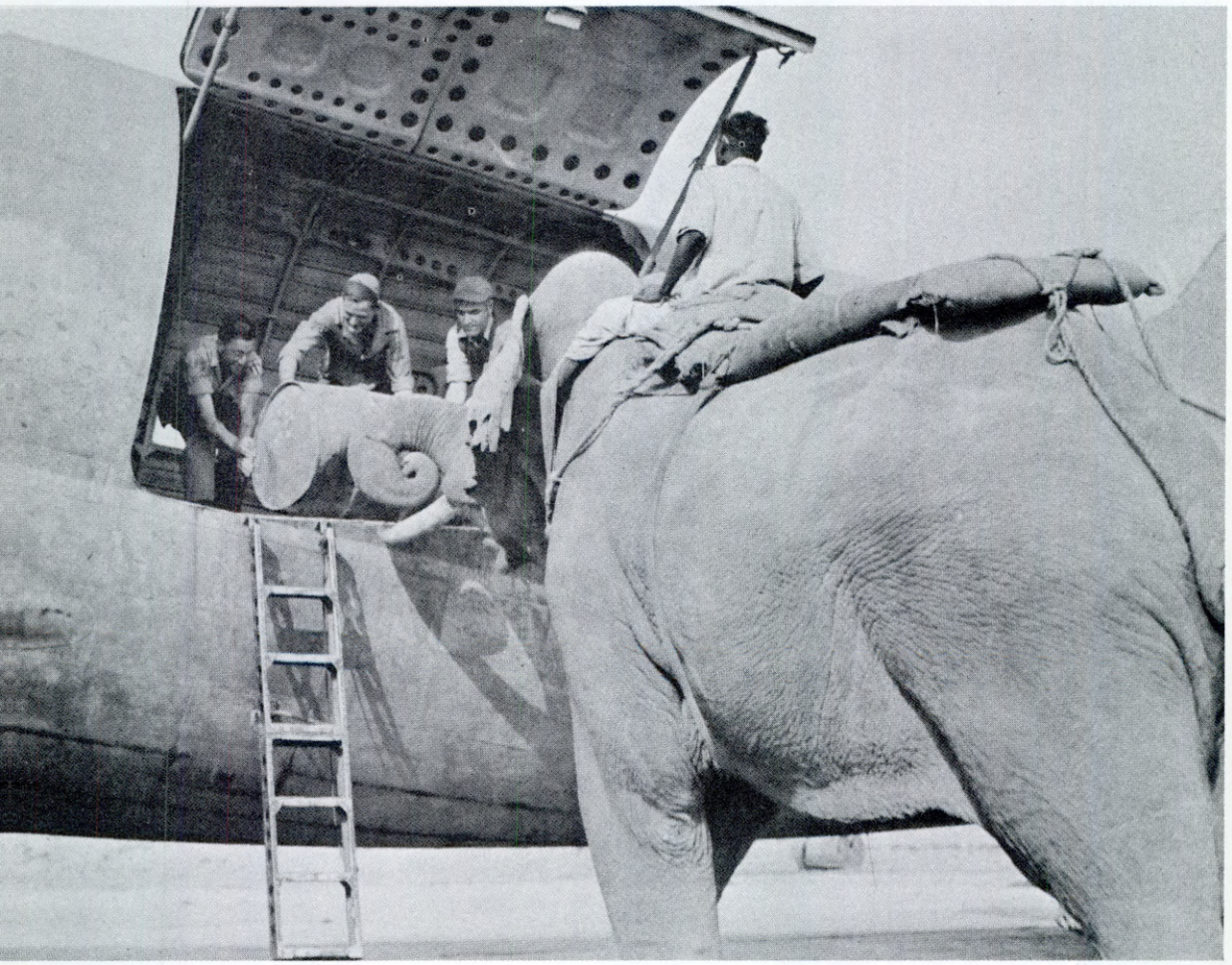

C-46'S ON THE ASSAM-CHINA ROUTE

Above: The First Ridge on the Hump Run

Below: Loading Gasoline Drums

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THE LEDO ROAD

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best oriented toward Sumatra, and, indeed, the leisurely pace of construction normal in Ceylon discouraged the selection of any virgin site.

Construction of the fields would be a responsibility of Mountbatten as SACSEA. He had known of the MATTERHORN project at Cairo but had left before its final approval. He hoped to use the B-29's in a drive southeastward toward Singapore but had received no definite order to provide the VHB fields in Ceylon. On 5 March General Kuter, then in New Delhi on a mission for AAF Headquarters, received Lord Mountbatten's promise to build the B-29 fields when requested.[72] The request came soon through Stilwell, whose directive of 6 March specifically called for staging fields in Ceylon.[73] En route to Australia, Kuter stopped off at Colombo and conferred there with SEAC officers. He learned that the British were currently working on two bomber fields with long strips, apparently the ones referred to at Cairo. They were located at Kankesanturai, near Jaffna at the north end of the island, and Katunayake, in the west near Negombo; neither was favorably oriented, and completion dates were scheduled for late 1944 or 1945. As alternates the British suggested Minneriya and China Bay. Kuter preferred Matara in the extreme south, but that was vetoed because of its inaccessibility.[74] Finally the four sites named by the British were accepted; China Bay and Minneriya, with high priorities, were scheduled for completion in July.[75] In April it appeared that the date could not be met and, with JCS permission, work at Minneriya was temporarily suspended. Engineers from XX Bomber Command and AAF IBS worked with the British at China Bay in an effort to meet minimum requirements. Accommodations there were increased to handle two B-29 groups (fifty-six planes), and by concentrating on the one field SEAC was able to approximate the schedule. Some equipment, including a fifty-six-point fueling system, was sent in by XX Bomber Command. By mid-July, a 7,200-foot runway, the hardstands, and the fuel distribution system were complete, and when the first mission was run, belatedly, on 10 August, the field was fully operational.[76]

Movement Overseas

In January 1944 the Joint Intelligence Committee, considering the various base areas under consideration for use by the B-29's, rated Chengtu as the locality offering the greatest logistical difficulties.[77]

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Few persons in the MATTERHORN planning staff would have challenged that judgment. Referring to air operations in China, General Arnold had recently said for public information that "to supply our growing air strength in that country has been perhaps the greatest single challenge to the efficiency of the Air Force."[78] The B-29 project promised to aggravate an already complex situation. The most obvious difficulty lay in the lack of an adequate system of communications within the CBI, and the problems arising therefrom will be described in the next section of this chapter. Even to get the necessary men and supplies to India, however, taxed the ingenuity of officers in Washington and the CBI. Three factors, especially, handicapped their efforts: the inordinate distance from the United States to India; the low priority accorded the CBI in the allotment of shipping; and the insistence on an early commitment of the B-29, which left little time for readjusting existing transportation schedules.

The B-29's could be flown out by their own combat crews, a mere matter of 11,500 miles by the route chosen. Highest-priority passengers and freight could go out by ATC's planes via Natal, Khartoum, and Karachi, a trip which might be made in six days with luck but which for some XX Bomber Command personnel took more than a month. Eventually a special "blend" service was installed—by surface ship from Newark to Casablanca and thence to Calcutta by ATC transport—which required four to five weeks for passage. But the great bulk of troops and supplies had to be moved by water. Some units proceeded eastward via North Africa, where they transshipped in British vessels and went on through the Mediterranean and Suez. Other units and most supplies went westward from the States, around Australia, whence supply ships went up through the Bay of Bengal to Calcutta, and troop ships sailed to Bombay where the soldiers entrained for an uncomfortable week of travel to Kharagpur. One lucky contingent made it from Los Angeles to Bombay in thirty-four days, but most units were eight to ten weeks in passage from American ports of embarkation to their Bengal stations. A Liberty cargo ship could make a trip out in sixty days and accomplish two turn-arounds in a year. Ports in India were few, overtaxed, and inefficiently operated; even Calcutta was rated by a XX Bomber Command officer as "a good port with bad habits."

MATTERHORN was not, by standards of the ETO, a tremendous undertaking. The logistics tables used at SEXTANT called for bot-

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toms to accommodate 20,000 troop spaces and 200,000 tons of dry cargo between 1 January and 30 June, and something more than 20,000 tons of POL per month after 1 April.[79] Bottoms were hard to find (a SEXTANT cable declared succinctly, "shipping is bottleneck") but sinkings by submarines in the last quarter of 1943 were fewer than had been anticipated and tonnage and troop spaces might be had by ingenious juggling of schedules and by accepting some delays. Troop transports were harder to find than cargo ships.[80] To secure either type it was necessary to interpret liberally the proviso with which MATTERHORN was accepted—that it be mounted "without materially affecting other approved operations."

The first units dispatched, the engineers who went out on the 15 December convoy, were provided for out of trooplift regularly assigned to the CBI.[81] Stilwell had agreed to this but with the understanding that extra shipping would be allocated for other MATTERHORN needs. At SEXTANT additional lift for 3,000 troops was allotted to the CBI and was earmarked for two service groups, an air depot group, and various smaller units.[82] By Christmas shipping had been found for all troops and supplies scheduled for XX Bomber Command through July.[83] Allocation did not insure prompt delivery. It was important that initial organizational equipment go out with the units. In this category, Air Service Command items were dispatched with some promptness, but not so Army Service Forces items. It was necessary to set up special priorities for the latter in February, and by the 19th some 52,000 tons had been shipped, leaving a backlog in U.S. ports of only 4,000 tons.[84] The late start was reflected in the need, already described, of borrowing heavy construction equipment in India.

Before the end of February most of the troop transports were at sea.[85] One large contingent of men, including seven bomb maintenance squadrons, sailed from Newport News on 12 February in a convoy of Liberty ships bound for Oran, transshipped in the British-operated *Champollion*, and reached Bombay on 1 April. Other units, sailing on 22 February via Casablanca, went on from there in the *Vollendam*, arriving at Bombay on 25 April. More fortunate were those units, including eight bomb maintenance squadrons, which sailed from Los Angeles in the *Mt. Vernon* on 27 February and arrived at Bombay on 31 March.[86] Other troops arrived in Bombay during April and went on to Bengal by rail. A station list of 10 May

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showed 21,930 men on hand. This included some CBI and a few British troops attached to the command and those MATTERHORN personnel who had come out by air. But in all, something like 20,000 men, most of whom had come by sea, had arrived in India in March and April, and had been processed and put to work.[87]

Because of the pressure of time, air transport was of great importance in moving out personnel and high-priority freight. Small advance parties went out by regular ATC service. The first important movement was that of the twenty C-87's assigned to the command. Led by General Wolfe, those planes left Morrison Field on 5 January, carrying key personnel and some equipment, and arrived at New Delhi on the 13th.[88] The original plan of ferrying out all combat crews, regular and extra, and some other passengers in the B-29's was scrapped. With the R-3350 engine still untried, it was considered necessary to have more than the usual number of spares, and it was decided to haul one engine in each B-29 in lieu of passengers. Even so, ATC would have to help. AAF Headquarters estimated requirements from that service as: February, 90 tons; March, 130 tons; April, 240 tons; May, 230 tons;[89] passenger total, 1,252. Stilwell agreed to underwrite these amounts from his allotments.[90] The movement of personnel from the various headquarters (command, wing, groups, and squadrons) began on 20 February. Priorities were low and there was the usual amount of "bumping" in favor of VIP's; some men were as long as thirty-five days en route, a little longer than those on board the *Mt. Vernon.* They arrived in India with some recently acquired geographical lore, souvenirs picked up in three continents, and loud gripes about ATC.[91]

Meanwhile, it had become obvious that the AAF's estimate of needs was too low and that some additional airlift must be provided temporarily, especially for the R-3350 spares.[92] A special surface-air transport service was established, with passengers and freight going to Casablanca by ship and thence to Calcutta by ATC. For this, twenty-five C-54's were assigned to ATC's North African Wing.[93] The shuttle service, known as "Mission 10," lasted from 8 April to 1 June, hauling about 250 engines and 1,225 passengers. Time in passage from the States was three to four weeks.[94]

This was only a stopgap for the crucial months of April and May. In mid-March Arnold had informed Wolfe of the intention of providing him with three "bomber support" squadrons with initial unit

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equipment of eighteen C-46's each. Arnold's idea was that the first squadron might be used to augment the command's Hump tonnage and the second and third to operate on the Casablanca-Calcutta shuttle until October.[95] The first squadron arrived in April, a month later than had been promised, and was put on the Hump run. The other units, now designated 1st and 2d Air Transport Squadrons (Mobile), were assigned to ATC's North African Wing and began the so-called "Crescent Blend" service on 6 June. This guaranteed to XX Bomber Command 333 tons per month (including about 225 engines) in June and July, slightly more thereafter.[96] The service was something of a chore to ATC. The C-46 lacked the range of the C-54's normally used on the Casablanca-Calcutta run, and a new operational procedure had to be set up. The mobile squadrons had no service personnel attached; they had to "live off the land" and the land in this case was ATC.[97] But the Blend was a valuable service for XX Bomber Command at a time when engine spares were essential to operations. In addition, a fifty-ton allotment of all-air delivery from the United States to India was assigned to Wolfe's command out of ATC's "Fireball" service.[98]

The overseas movements of the B-29's justified the expectation that R-3350 spares would be needed in substantial quantities. That movement had been postponed repeatedly, in anticipation, by delays in production and modifications of the B-29's and in the construction of the Bengal fields. By the end of January it appeared that most of the initial complement of 150 B-29's would be ready early in March and that by using various temporary expedients provision could be made for receiving them in India. Thus early March became the target date for dispatch.[99]

According to a plan worked out in Salina and Washington and coordinated with Eighth Air Force Headquarters, the first B-29 went to England via Natal and Marrakech.[100] In part, this initial flight was to test the new bomber in long over-water flights, as well as to serve as a cover plan. The B-29, a hard plane to hide under a bushel, had been publicly announced by Arnold as ready for combat in 1944.[101] The Japanese were aware of the existence of the abnormally long runways near Calcutta and Chengtu, and when the Superforts arrived in the CBI, it would take no mastermind to deduce their probable target. The cover plan called for controlled leaks to create the impression that the B-29 would be used in the ETO for combat but that because its range had not lived up to expectations the bomber would be used

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in the CBI only as an armed transport.[102] Stilwell gave "news" releases to that effect in his theater.[103] Col. Frank Cook flew the B-29 to England early in March and exhibited his plane as directed.[104] Flight data transmitted to Salina indicated no serious variations from previous experience.[105] Cook went on to Kharagpur, arriving on 6 April;[106] his B-29 was the second to reach the goal. On 1 March General Arnold had informed the CBI of the flight schedule for the 58th Wing.[107] The planes would go out in daily increments of nine or ten planes, beginning on 10 March; with a five-day trip planned, this would put all the B-29's at their stations by the 31st. The designated route was:

Salina to Gander Lake	2,580 miles
Gander Lake to Marrakech	2,700 miles
Marrakech to Cairo	2,350 miles
Cairo to Karachi	2,400 miles
Karachi to Calcutta	1,500 miles
Total	11,530 miles

By 10 March it was necessary to retard the initial flight and each subsequent increment by a fortnight; according to the new schedule, all the B-29's would arrive between 1 and 15 April.[108] The lead plane almost made it in on time. Very much impressed with the "historic" significance of this first arrival, public relations officers staged an elaborate welcome, with a fighter escort aloft and a plentiful supply of brass, sound film trucks, and reporters on the ground. After several false alerts and eleventh-hour changes in the ETA, the audience had lost something of the sense of drama when Col. L. F. Harman eased his Superfort onto the runway at Chakulia on 2 April.[109]

By 15 April only thirty-two planes were at their stations. Save for one forced landing at Presque Isle, the B-29's had made the ocean passage without trouble, but then misfortune set in. First came a total wreck at Marrakech on 13 April, then a partial one at Cairo on the 10th, and then, in rapid succession, five serious accidents including two planes completely lost at Karachi. All planes along the route were grounded from 21 to 29 April. Investigation proved that most accidents had occurred from engine failures, some of which could be blamed on inexperienced crews.[110] When flight was resumed the ferrying went more rapidly. On 8 May, 148 of the 150 planes had reached Marrakech and 130 had arrived at their home fields.[111] The movement was under control of ATC and both that organization and XX Bomber Command profited by experience. This is shown by the

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safety record. Of the original 150 planes, 5 were lost and 4 seriously damaged; yet by March 1945 when the movement of B-29's to India ceased, 405 planes had been ferried out with only 8 total losses—that is, 3 out of the last 255.[112]

The elaborate cover plan seems to have fooled no one—at least not Japanese intelligence. There is a report to the effect that Colonel Harman's arrival at Chakulia was greeted by an enemy radio broadcast which identified the B-29, and Japanese announcers continued to comment on the VHB fields near Calcutta and Chengtu.[113] XX Bomber Command and ATC made mutual accusations of security breaches along the ferry route, and in both India and China the Japanese had many agents.[114] Whatever the source of the leak, when the enemy had a brief test of the B-29's armament in an interception of an over-the-Hump run on 26 April, he seems to have had no illusion that he had tangled with the long-range armed "supertransport" of the news releases.[115]

The several units settled into their Bengal bases: XX Bomber Command Headquarters and 468th Group, Kharagpur; 58th Wing Headquarters and 40th Group, Chakulia; 462d Group, Piardoba; and 444th Group, Charra (temporarily).[116] Neither the India nor the China bases were operationally complete, but the successive delays in arrival of the B-29's made that of less importance than it had appeared. On 26 April Arnold wrote to Wolfe: "The airplanes and crews got off to a bad start due to late production schedules, difficult modifications, inclement weather, and the sheer pressure of time necessary to meet the early commitment date."[117] Perhaps the last was the most important element, for from November 1943 on it had made impossible any close articulation of the various stages in the deployment plan. Thus in early May, with his combat elements on hand or momentarily expected, Wolfe was still faced with the task of building up a stockpile before he could launch his first mission, already overdue by the Cairo schedule of operations. Both stockpiling and the B-29's themselves were endangered, now that the MATTERHORN designs could be sensed by the Japanese, by the late arrival of the fighter defense forces for Chengtu.

Air defense of the B-29's in China was Chennault's responsibility. In September 1943 he had stated his requirements as "at least 1 Gp of fighters (150 P-51's recommended)";[118] the MATTERHORN plan had called for two fighter groups. At Cairo the CCS decided to trans-

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fer two P-40 groups from Italy, re-equipping them with P-47's.[119] Stratemeyer asked that the P-47's be sent from the United States to Karachi in January and February, and that the pilots arrive in time to complete transitional training there.[120] The units could not be released, however, until after the initial phase of the Anzio operation (D-day, 22 January), and by ordinary surface shipment the P-47's could not get to Karachi before 1 May. At the AAF's request, the Navy agreed to ferry out 100 P-47's on the CVE's *Mission Bay* and *Wake Island;* the other 50 would go by regular transport.[121] The units selected were the 33d and 81st Fighter Groups, veterans of the North African, Sicilian, and Italian campaigns. The ground echelons sailed from Taranto and arrived at Bombay on 20 March; the flight echelons proceeded by air in mid-February.[122] The two CVE's brought the P-47's into Karachi on 30 March and two weeks later transitional training was begun.[123]

To provide for proper control of the fighters, the Fourteenth Air Force on 13 March activated the 312th Fighter Wing, of which Brig. Gen. A. H. Gilkeson, just arrived from the States, assumed command on 25 March.[124] When the first B-29 landed at Chakulia on 2 April, the wing was still only a skeleton organization, inadequately staffed, with its personnel scattered from Karachi to Chengtu, and with only a few P-40's available for immediate combat. The situation caused some justifiable alarm. There was little fear for the Bengal fields, for though Calcutta had been bombed during Christmas week, the B-29 bases lay farther west, at extreme bomber range for the Japanese, and RAF and Tenth Air Force fighters were considered adequate protection. The dangers in China were much more apparent, and Chennault grew progressively more pessimistic in his analyses of enemy capabilities.[125] He attempted to get additional fighters to guard the Assam-China air route and to hasten the delivery of two squadrons of P-61 night fighters promised for July. He wished also to increase the number of fighters allotted to Chengtu, and to re-equip his new units with P-51's, much more economical of fuel than the P-47's, though he had accepted the latter planes under the assumption that they would be supplied by XX Bomber Command transports.[126]

Stilwell shared Chennault's anxiety and early in March had suggested that the target date for B-29 operations be postponed a month to allow the defense forces to be readied.[127] When this request was refused, it was decided to send one squadron of the new wing on to Chengtu with their old P-40's, and allow the other five squadrons to

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follow as they were re-equipped with P-47's.[128] The 59th Squadron flew into Szechwan province with its P-40's and was the only local fighter defense when the B-29's began their transport activities late in April. The other two squadrons of the 33d Group (58th and 60th) followed with their P-47's in May. On 15 May, the 92d Squadron of the 81st Group arrived at Kwanghan, but it was two months later before the other two squadrons (the 91st and 93d) came.[129] Japanese attacks on the Chengtu fields were to prove less intensive than had been feared, and the late arrival of the fighters should have eased somewhat the task of stockpiling fuel for B-29 missions. That task became the chief concern of XX Bomber Command and the needs of the 312th Wing continued to be an important part thereof.

Transport Within the CBI

The MATTERHORN logistics plan was a long document, but its essence was compressed into a single sentence by an early emissary of XX Bomber Command in the CBI. "Remember too," he wrote to a friend at Salina, "that every single goddam thing that we send into China has to be flown in." There was little opportunity to forget that fact.

MATTERHORN transportation difficulties began at factories and depots, at air bases and seaports in the United States, and dogged each ton and passenger along the slow trip to India. Yet it had been possible to move out XX Bomber Command and its equipment without disrupting too seriously existing shipping schedules; resupply would be comparatively simple. The rear area bases were well located, with rail and motor road connections with Calcutta and the facilities grouped around the city—the port, the ATC terminus and the Bengal (28th) Air Depot at Barrackpore, and ASC's installations at the Alipore airport. Surface transportation routes in the region, good by India's standards, proved unequal to the new demands and the command had to rely in part on an inter-base air-shuttle service in Bengal. But this was a minor evil; the crucial stage in the MATTERHORN supply route was the Calcutta-Assam-Chengtu haul, with the fabulous Hump as its midriff.

The distance, while great, was not prohibitive: a B-29 with cargo could easily make the 1,200 miles or so from Kharagpur to Hsinching in five to five and one-half hours. The movement of goods along existing theater channels was much slower: ordinarily a shipment would

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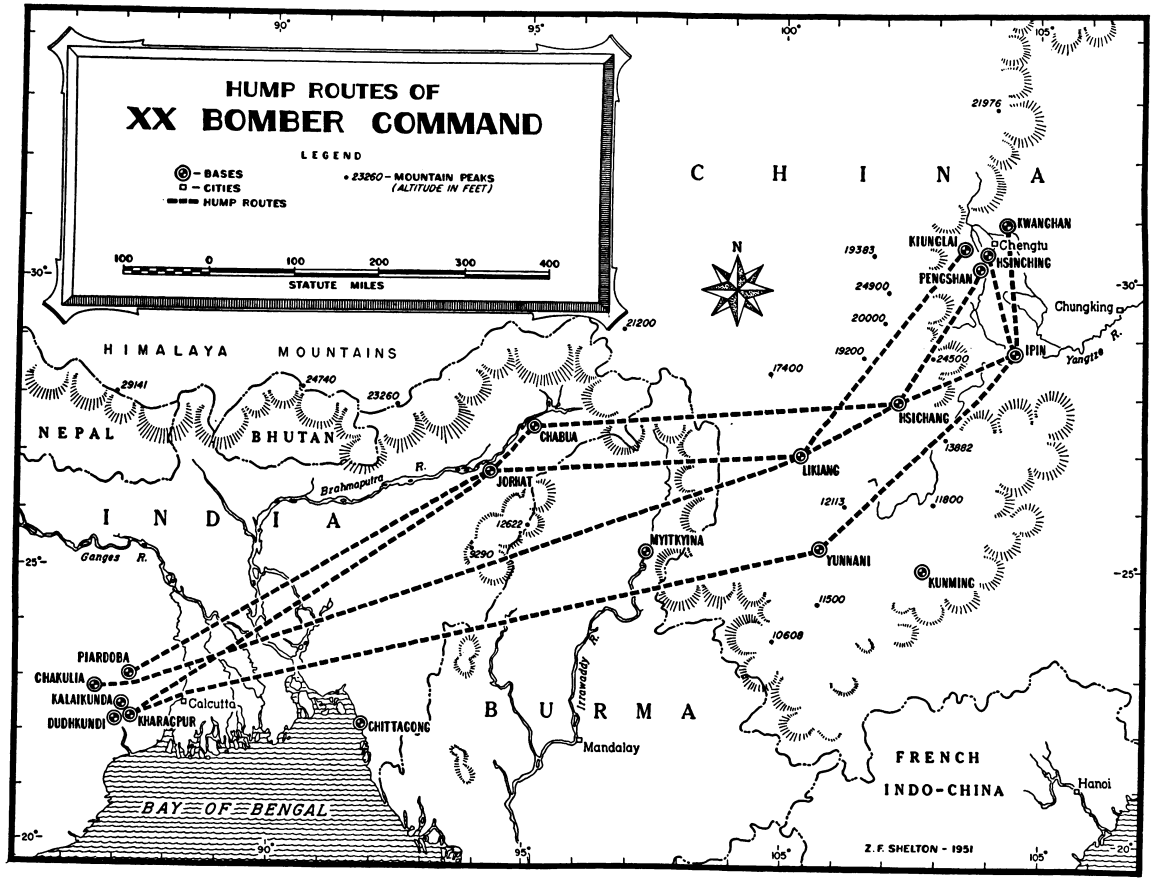

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proceed from Calcutta to Assam by river barge and rail, and thence via Kunming to Hsinching by ATC plane, taking several weeks in transit. That mode of transport did not figure originally in the MATTERHORN plan. The India-China Wing (ICW) of ATC had materially improved its Hump tonnage during the autumn months of 1943. In December 12,594 tons were delivered in China, more in January and February, and though the totals fell off in each of the spring months of 1944, there would be a marked increase from June on. But that tonnage was jealously regarded by the several using agencies, of which the Fourteenth Air Force was chief. The various CBI commands had accepted the MATTERHORN plan without enthusiasm and with a clear understanding that the VLR project would not impinge upon current allocations for transport. Approval at Cairo had carried the same proviso. The key feature of MATTERHORN was that XX Bomber Command would supply its own staging bases, using its B-29's and its twenty C-87's.

Unable from the beginning to sustain itself, the command had to turn to ATC for aid. This antagonized other theater agencies and, when the aid proved insufficient, led to mutual recriminations between them and the VHB command. The latter tended to blame ATC, while ATC and the Fourteenth looked on the bomber command as an interloper with specious claims of independence and a habit of sponging on the strained services of ICW. This lack of understanding is reflected in the several accounts, which differ sharply according to provenience, of some of the important agreements. Even more disconcerting is the wide variation among the statistical records, which make it impossible to establish exactly the tonnages allotted, onloaded, or actually delivered to MATTERHORN users. Some inaccuracies were unavoidable under the circumstances—the ICW's historian wrote of the Chengtu area: "Records of tonnage allocations and deliveries were not kept primarily because no personnel were on hand to keep such records for ATC. The personnel at Hsinching were, for the most part, mechanics." But figures emanating from better-staffed headquarters have to be used with caution, and it is rare that perfect agreement can be found among several sources.*

Fundamentally the MATTERHORN supply plan was uneconomical, as must be any based on long hauls by air with fuel available at

* The figures which XX Bomber Command gives on its own transport activities can be checked against the daily record sheets; they are quite accurate. But in

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only one terminus. This Washington had always granted. Probably the transport resources added to MATTERHORN in successive increments might have yielded more tonnage had they been assigned to ATC, but the Twentieth Air Force feared to lose control of transport aircraft without a firmer guarantee than could be had. Given time, Wolfe might have been able to approximate his original design. But he worked always with an impracticable target date, and delays originating in the United States became cumulative in the CBI—delays in the arrival of troops, equipment, and aircraft, in the preparation of fields and installations. Tactical emergencies in the CBI interfered too with stockpiling for the first missions, so that the initial strike against Japan was repeatedly postponed, and when finally launched, its weight was well below earlier plans.

Wolfe had to establish his forward area base, move up the requisite equipment and personnel, nourish the latter (the 312th Fighter Wing and the 315th Service Group), and build a stockpile for his initial missions. For these transport tasks he had counted on the tactical B-29's and the twenty C-87's assigned his command. Wolfe brought the C-87's out to India in mid-January (losing one en route) with ATC crews on ninety-day temporary duty but with no organizational or maintenance personnel. AAF Headquarters had intended that the 308th Bombardment Group (H) should operate the planes for Wolfe's benefit.[130] General Stratemeyer objected to this additional burden for the 308th and won Wolfe's approval of another arrangement.[131] The nineteen C-87's would be turned over to the ICW in return for a guaranteed monthly tonnage; on 15 April the ATC crews would return to the States, and XX Bomber Command would resume operation of the transports.

This arrangement constituted a slight but real departure from the

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regard to ATC's contribution, XX Bomber Command estimates vary widely from those of ICW.

HUMP TONNAGE FOR XX BOMBER COMMAND

1944	*Feb.*	*March*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*
XX BC C-46's	—	—	14	117	280	1,162	798	707
Tactical B-29's ...	—	—	27	518	404	1,083	—	504
Tanker B-29's ...	—	—	—	22	396	753	1,106	814
C-109's	—	—	—	—	—	—	—	415
Total XX BC ...	—	—	41	657	1,080	2,998	1,904	2,440
ATC	427	2,608	1,399	1,293	308	976	1,478	2,141
GRAND TOTAL	427	2,608	1,440	1,950	1,388	3,974	3,382	4,581

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doctrine of self-sufficiency. For February, ICW promised Wolfe 1,650 tons from the first 10,250 flown over the Hump, and half of all surplus up to 11,500—a possible total of 2,275. This seemed more than the C-87's would haul, and the theater proposed to make good the deficit out of the allowance for the Burma-China pipeline.[132] ATC made 12,920 tons that month, but XX Bomber Command profited little: Wolfe released to Chennault 1,534 tons (of the basic 1,650) to be repaid later and Chengtu got only about 400 tons.[133]

March was a bad month for ICW; with a gas shortage in Assam and a serious diversion of C-46's in favor of Burma ground operations, Hump tonnage fell to 9,587.[134] Yet 1,997 tons were allocated to MATTERHORN, and ICW reported that it carried for the project 3,603 tons, the guarantee plus 1,606 tons to repay the February loan to Chennault.[135] Wolfe's version of the transportation was different. Of the 3,603 tons onloaded in Assam for MATTERHORN, 682 had been diverted to "other activities" and only 2,921 delivered at Chengtu. Of this amount, Chennault, who was badly squeezed by the light haul in March, claimed 800 for April delivery—the 312th Fighter Wing had to be set up at Chengtu.[136] By either reckoning, stockpiling was badly in retard. Stilwell's directive of 5 March called for the B-29's to stage one shakedown mission from Calcutta and one regular mission from Chengtu in April, three in May. With the late arrival of the B-29's and the slow build-up of supplies in China, that directive had to be scrapped.

In this crisis, Washington resorted to an expedient suggested earlier by the CBI—assignment of additional transports to MATTERHORN.[137] These were the C-46 bomber support squadrons mentioned in a previous passage, of which the first contingent reached Bengal on 10 April.[138] Some of the C-46's were put on the inter-base shuttle in Bengal; others, based in the Kharagpur area, began the Hump run, but during April hauled only fourteen tons into China.[139] The self-service B-29's did little better: by 1 May, once looked on as D-day, they had laid down in China twenty-seven tons, just enough to support one combat sortie.[140] The main burden in April was still on ATC. Wolfe claimed an allotment of 2,000 tons but received only 1,399, the other 600 going to Stilwell's Yoke Force on what Wolfe thought was a loan.[141] In all, 1,440 tons went forward in May.

Using a planning factor of 23 tons per B-29 combat sortie from Chengtu, Wolfe had hoped to have by 1 May a 6,000-ton stockpile to

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support two 100-plane strikes. According to his figures, he had received less than 4,800 of which 800 were claimed by Chennault; much of the balance went for uses other than the stockpile. High-octane gasoline was particularly short, with only 380,000 gallons in storage instead of an anticipated 660,000. With the transport capabilities of the B-29 appearing less impressive in practice than in anticipation and with a fixed charge for support of the 312th Fighter Wing now facing him, Wolfe felt that he might have to scale down the weight of attacks against Japan.[142] Additional transport equipment would see him through the present emergency, and Wolfe hoped to secure that help in the form of the C-46 squadrons assigned to the Crescent Shuttle for his support. Control of those squadrons (and of the C-87's) became then a matter of grave importance, much discussion, and several short-lived agreements between XX Bomber Command and ATC during April and May. None of these agreements was wholly satisfactory, nor was the arrangement worked out in a Washington conference on 12 May between representatives of AAF Headquarters and ATC.[143] A week later Stratemeyer had engineered another compromise between Wolfe and Brig. Gen. T. O. Hardin of ICW. The remaining C-87's and thirty-six C-46's would be assigned to Hardin, and the 1st Air Transport Squadron (Mobile) to Wolfe. ICW would lay down 1,500 tons monthly at Chengtu, of which 1,000 tons would be carried from Calcutta to Jorhat by Wolfe's planes, 500 by ICW.[144]

All this shuffling of units—some of which had not even arrived—effected no great improvement in May deliveries. Wolfe hoped to get from ATC his 1,500-ton guarantee, plus the 600-ton "loan" to the Yoke Force. The latter, however, had been written off by Chungking, and only 1,293 tons were offloaded in the Chengtu area.[145] The C-46's operated by the command, still new on the Hump run, carried 107 tons;[146] the tactical B-29's delivered 540 tons in 141 sorties, far less than the early estimates and about one-third of Wolfe's revised figures.[147] That record would be bettered as the full complement of planes swung into the job and as crews and ground organizations improved. But Wolfe had come to feel that the "use of B-29 as a cargo carrier has definite limitations and any large scale operations should be dependent upon regular cargo-type aircraft for supplies." He also pointed to the obvious fact that regular use of the B-29 as a transport would shorten its combat life.[148]

This attitude was a negation of the very essence of the MATTER-

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HORN plan. Wolfe and the Washington planners must have realized from the first that it would have been more economical to supply the B-29's by regular cargo planes than by the Superforts' own efforts; but lack of cargo planes in sufficient numbers, pressure of time, and perhaps fondness for the AAF concept of the bomber unit as a self-contained entity had led to the adoption of a logistical system which had already been modified and which was facing collapse. The one hopeful statistic was too small to be appreciated yet—the twenty-two tons hauled in May by B-29 "tankers." Wolfe had stripped some planes of all combat equipment except tail guns and a minimum of radar, and thus was able to haul seven tons of aviation gasoline (avgas) per trip as against three in a tactical plane. This stripping was questioned in Washington, but planes could be combat-readied in a week, and until the stockpile grew, there could be no combat missions.[149]

At mid-May, Wolfe calculated that his first two missions (100 sorties each) would require 4,600 tons plus what the tactical B-29's carried.[150] This he could not transport rapidly with resources presently available; by 26 May he estimated that, by reaching a total of 4,840 tons in June, he could stage his first strike about the 20th and a second in July.[151] This schedule the enemy spoiled. At the end of May the Japanese pushed off in their long-anticipated drive for the Canton-Changsha railroad. On 4 June Stilwell diverted to the Fourteenth tonnage previously guaranteed to MATTERHORN. The JCS sanctioned this, but they refused Chiang Kai-shek's request, forwarded by Stilwell without indorsement, that the MATTERHORN stockpile be turned over to Chennault in the emergency.[152] After questioning Wolfe as to his immediate capabilities, the JCS on 8 June ordered him to put at least seventy B-29's over Japan on the 15th—this to relieve pressure in east China and to coordinate with the landing on Saipan.[153] Even a strike of this reduced weight could be achieved only by increasingly drastic economies in the forward area.

Since the war, General Chennault has stated publicly that such economies were not effected:

> The Twentieth Air Force refused to face the realities of the China supply situation. Even when gas was so low at Chengtu that their defending fighters could not fly local interceptions, the Twentieth refused to live off the land and operate on skeleton tables of organization. They continued to fly in thousands of tons of American food and excess personnel into [*sic*] China at the expense of gas and bombs. . . . They always retained indelible recollections of the Pentagon standard of living.[154]

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A different version of the story came from XX Bomber Command. In 1944, while the supply problem was still a very live issue, the command's historian wrote:

> Faced with the necessity of executing a combat mission on the directed date, despite its reduced transport capacity, the command had only one alternative: to reduce the delivery of equipment, supplies and personnel to all units in the forward area to the bare essentials required to sustain life and permit the airplanes to take off for the target. These instructions were so stringent that all surface transportation to [*sic*] the forward area ceased with the exception of one vehicle per base. No supplementary rations were supplied to the garrisons in the area. All supplies of PX rations were eliminated. There was no shipment of clothing, less than 25 percent of the mail. No hospital rations and no additional personal or organizational equipment were supplied. Indeed, insofar as supply was concerned, personnel in the forward area were isolated and limited as if they had been on a desert island. Full colonels walked two miles to their airplanes.[155]

This passage is, for the period concerned, an almost point-by-point denial—five years in advance—of Chennault's blanket charges. The detail of the walking colonels may tax the credulity of some readers, but during the emergency of late May and June there does not seem to have been much "Pentagon standard of living" at Chengtu.

Unfortunately for intra-theater amity, the economies begun in May had been applied to the Chengtu organizations belonging to the Fourteenth Air Force. By agreement between Wolfe and Chennault, the 312th Fighter Wing and the service forces were to get 1,500 tons per month—half of the figure originally demanded. In May this allotment was reduced to 1,000 tons, apparently without consulting Chennault and certainly without full coordination with the 312th.[156] For want of a priority list from the fighter units, XX Bomber Command determined what goods should go forward as well as total tonnage. In the June emergency the 312th fared even worse; Chennault claimed the wing got "practically nothing," while XX Bomber Command statistics said 600 tons.[157] When the command flew its first combat mission from Chengtu, Gilkeson had enough gasoline to fly only four two-hour sorties with 60 per cent of his fighters; not unnaturally he was alarmed.[158]

The pinch was felt by others as well. In spite of economies and strenuous efforts to increase net tonnage, XX Bomber Command on 15 June could hardly support at Chengtu the minimum demand for a seventy-sortie mission. This effort so bled the forward fuel stocks that

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some planes could not return immediately to Calcutta.[159] ATC's deliveries, cut off on 5 June, amounted in the month only to something over 300 tons; XX Bomber Command had done somewhat better for itself than in May, with 280 tons by C-46's and 800 tons divided about equally between B-29 tactical planes and tankers. The two combat missions, the shakedown on 5 June and the trip to Japan on the 15th, had interfered sharply, and the month's total of 1,388 tons was the lowest since February.[160]

To make up the deficit caused by the diversion of ATC tonnage, Arnold reassigned to XX Bomber Command the 2d and 3d Air Transport Squadrons (Mobile), then working on the Crescent Blend. The 2d was on the Hump run before the end of June, the 3d by 8 July.[161] By the latter date Wolfe had some 60 C-46's and his B-29's to meet requirements for his July target directive: a 15-sortie mission early in the month, a 100-sortie effort during the last 10 days.[162] To insure a build-up, he again cut back the 312th Wing, this time to 850 tons. By his staff's calculation, this should give the fighter groups ten hours' flying time per pilot and a small reserve.[163] Admittedly it was a slim margin, and though more than June deliveries, 850 tons fell far short of the original agreement and of the 312th's idea of a safe minimum. (Ironically, XX Bomber Command returned Chennault's charges of exaggerated standards of living, saying that the 33d and 81st Fighter Groups, accustomed to the luxurious life of the MTO, could not adjust to the scarcity economy of China.)[164]

Chennault on 25 June informed Arnold of the "deplorable conditions" and stated flatly that "under existing conditions I cannot be held responsible for defense of Chengtu."[165] Settlement of the immediate problem fell to Stratemeyer who had logistical responsibilities for both the Fourteenth Air Force and XX Bomber Command.[166] The correspondence from the generals concerned which passed over Stratemeyer's desk during the next week was acrimonious in the extreme. Chennault accused Wolfe of cutting back fuel deliveries to the 312th beyond the safety line and of determining cargo priorities arbitrarily ("Gilkeson has no idea as to what he will receive and is entirely at the mercy of Wolfe who controls the purse strings. . . .").[167] Wolfe denied the accuracy of Chennault's figures on fuel deliveries and affirmed that the amounts scheduled had been agreed to by Gilkeson.[68] On 3 July Wolfe had to accede to Chennault's demand that the previous guarantee of 1,500 tons monthly for the 312th be re-

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stored, with the further concession that Chennault determine the breakdown of the tonnage.[169] Four days later the arrangement was modified somewhat by mutual agreement. Wolfe turned over to Chennault, effective 20 July, XX Bomber Command's claim to 1,500 tons monthly from ATC and was relieved thereby of all logistical responsibility toward the 312th and its service organizations. This was an excellent deal for the command, ending a long and bitter dispute, and cutting down on staff work.[170]

Furthermore, the total lift for July set a record. The ATC allotment, restored during the first 20 days of the month, amounted to 976 tons, just enough to meet the 312th's quota. The bomber command's enlarged fleet of C-46's hauled 1,162 tons, the B-29 tankers 753, the tactical B-29's 1,083. The latter record was accomplished in spite of a halt for the two designated missions which were run off as scheduled with a combined total of 115 sorties.[171] The improvement came as the command learned more about the B-29 and C-46, and more about the air transport business. Lt. Col. Robert S. McNamara's Statistical Section practically ran the show, watching carefully the variable factors: aircraft in tactical use, aircraft out of commission, turn-around time, gross load, and net offload.* The first factor was of course out of their control, but in the others careful study brought marked improvement. Thus, between May and the end of July the average gasoline consumption on a round trip was reduced from 6,312 to 5,651 gallons; the net offload rose in the same period from 495 to 1,326 gallons, and at the end of July tankers were laying down 2,496 gallons net.[172] At either period it was expensive, but at worst it meant burning twelve gallons of gasoline to put down one in Chengtu, at best two for one; the margin was the measure of the command's adjustment to the transport task.

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FACTORS AFFECTING HUMP TONNAGE DELIVERED BY XX BOMBER COMMAND

1944	*April*	*May*	*June*	*July*	*Aug.*	*Sept.*
B-29 transport trips	7	238	164	237	116	206
C-46 transport trips	—	58	150	419	368	265
B-29's in commission (for transport or operations)	—	38%	37.5%	41.3%	41.1%	50%
B-29 abortive rates	18.2%	14.7%	18.1%	11.5%	7.5%	9%
B-29 turn-around time in China—in days	—	2	1.8	1.4	1.5	1.5
B-29 average net offload per trip—in tons	—	2.25	4.87	7.66	9.53	6.40

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The flight by a B-29 was a "through" trip via the Assam valley and over the Hump without making Kunming. In the early months fear of enemy interception sent the planes along a northern or southern route, according to which had weather dangerously clear or overcast enough to render interception difficult; later each group had its own route. But Japanese fighters caused little trouble: there had been six or seven contacts by the end of July but no determined attacks.[173] The route was a dangerous one, nonetheless, with its jagged ranges and uncertain weather and communications, so that combat time was allowed for all transport trips. In the same period an even dozen B-29's were lost, mainly from engine failures, as against six C-46's by September.[174] Most of the crews were saved. Some bailed out over friendly territory and received hospitable treatment from the Chinese. Others fared less well, coming down in the dread Lolo country. Their walk-out reports and the report of Capt. Frank Mullen of Air Ground Aid Service, who penetrated the Lolo land on a rescue mission, portray a wild country and a people as untouched by western civilization as in the days of Marco Polo.[175]

In July for the first time XX Bomber Command approached its ideal of self-sufficiency; the 3,000 tons hauled forward by its own planes just about supported the 115 sorties. But this was the peak of performance by the B-29's and the weight of attack against Japan was but half what had been anticipated earlier. If the resources already poured into MATTERHORN were to be more fully realized, the supply system must be revamped. The changes were to come in late summer when a change in strategic plans in the Pacific called for a more intensive air effort in China.

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CHAPTER 4

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XX BOMBER COMMAND AGAINST JAPAN

FOR its program of strategic bombardment XX Bomber Command borrowed from the Eighth Air Force many of its basic concepts and operational techniques. This was not unnatural: the Eighth had a richer experience in that mode of warfare than any other U.S. air force, and because many key figures in the Twentieth Air Force and its commands had served with the Eighth, that experience was easily available. A case in point is the method of combat reporting: XX Bomber Command's tactical mission reports were patterned directly after those issued by VIII Bomber Command. Compiled at Kharagpur within a few weeks after each mission, the reports consolidated combat and technical information drawn from the lesser combat units and the various service and technical agencies concerned. Damage assessments were brought down to the date of issue but must, of course, be subject to constant reappraisal as new information becomes available, and certain types of statistics—notably on losses inflicted on enemy fighters—must be used with caution; but for much of the information given there is no need to go to the records of the subordinate units. The reports were made for command and staff personnel who needed a more precise record than that provided by spot intelligence summaries, but they have later proved valuable enough to the historian to warrant more than a passing word of thanks to the compilers. A complete file of the reports (numbered serially according to the missions) forms the basic source for MATTERHORN operations.

Much as these useful (if somewhat dessicated) battle reports resemble those of the Eighth Air Force in form, however, a view of the whole series and of the voluminous Washington-Kharagpur corre-

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spondence reveals two important differences between the MATTERHORN program and that of the Combined Bomber Offensive in Europe.

There was first the obvious difference in intensity. This was especially noticeable if the comparison be made as of the summer and fall of 1944 when the Eighth had reached its full strength. It was true also even if the figures of the Eighth's early days are taken. For nearly 10 months (6 June 1944 to 31 March 1945) XX Bomber Command operated in the CBI, running 49 missions with a total of 3,058 sorties. During a like period at the beginning of its career (17 August 1942 to 11 June 1943) the Eighth Air Force had run 62 missions with 5,353 sorties in spite of a slow start.[1] The difference came not so much from the size of the respective forces—it was only on its fourteenth mission that the Eighth was able to equal the 98 bombers airborne on XX Bomber Command's maiden effort. It resulted rather from MATTERHORN's peculiar logistics system, which required a long interval of transport operations to build up a fuel stock for each strike.

The second difference is to be found in the peculiar control system for MATTERHORN which left to a Washington headquarters the choice of targets and target dates (within the limits of possibility), and a great influence over tactical means employed. The far remove of this headquarters from its combat units and from the harsh realities of the theater made for an extensive, often protracted, correspondence by radio message, teletype conference, and courier over each separate mission. Those communications and the rarity of the strikes give to each mission a flavor of distinctiveness rare in the ETO and later in B-29 operations from the Marianas. The narrative which follows may reflect this flavor rather than the intrinsic importance of the strikes, which were seldom decisive.

The MATTERHORN plan as approved by the JCS early in April had derived its target objectives from a study submitted by the COA on 11 November 1943,* giving preference to six target systems, of which two—anti-friction bearings and electronics industry—were passed over by the AAF planners; to the other four—aircraft industry, coke and steel, shipping in harbors, and urban areas—was added the refineries at Palembang as a compromise with those who supported POL targets. The COA had refrained from giving relative priorities but had showed a marked bias in favor of steel and coke, and this

* See above, pp. 26–28.

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Twentieth Air Force planners were willing, from operational considerations, to accept as the target system to be hit first. Thus, in a revision of the air estimate and plan on 1 April 1944, they calculated the capabilities of the force for the first phase of operations (April to September) at 750 successful sorties out of China bases; of these, 576 were to be directed against coke ovens, 74 against shipping in harbors, and 100 against urban areas. Palembang was to be hit by staging through Ceylon and the aircraft industry to be saved for a second phase of operations.[2]

This estimate was grossly optimistic, but in general the objectives held up with something like the relative importance indicated in spite of serious changes in the tactical situation in the CBI. Save for the attack on Palembang and small efforts against shipping and urban areas, it was steel—through coke ovens—which absorbed the bomber command's efforts through September. But before the campaign against the Inner Empire opened there was need for a trial run.

First Phase

By many at AAF Headquarters the whole MATTERHORN project was considered a shakedown operation, one which would remove the kinks from the B-29 and its using organization before intensive operations were launched from the Marianas. But MATTERHORN had its own shakedown. XX Bomber Command's staff thought of this process as involving three stages: the mass flight to the theater, the long weeks of hauling supplies over the Hump, and the first combat mission, staged against Bangkok on 5 June. The Bangkok raid was run without fanfare, its slight achievements being falsely credited for the moment to EAC's B-24's. The command called it a practice mission but it was more than practice, more than dress rehearsal; it was rather the New Haven tryout before the Broadway opening.

From the fly-out to India and from the Hump operations, crews had learned much about the B-29 and its R-3350 engine under varying climatic conditions. But the transport job had curtailed the more formal aspects of training, had absorbed indeed so much of the command's energies that men had all but lost sight of the real mission, and a soldier could propose a toast in tepid mess-hall water to "the XX Bomber Command, a goddam trucking outfit."[3] The late delivery of B-29's to the 58th Wing in its Salina period had left serious gaps in its training program for which no amount of gas-trucking would sub-

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stitute: notably in high-altitude formation flying, rendezvous, gunnery, and bombing, visual and radar.* Because of these deficiencies, General Wolfe decided to have his first go at the enemy at night, with planes bombing individually.

Wolfe signed the first field order on 17 May, with D-day slated for the 27th.[4] This plan Washington vetoed on 19 May, General Arnold insisting that only a daylight precision attempt would provide the practice needed for the type of operations contemplated.[5] By that date the command had piled up in the theater a total of 2,867 B-29 flying hours, of which 2,378 were on transport service, 50 on miscellaneous jobs, and only 439 in training activities, giving an average of less than 2 hours apiece for the 240 crews on hand.[6] Wolfe postponed the strike and instituted a short, intensive training program. Bombardment runs were made at a range on Halliday Island, made available by the British; crews were given some training in formation flying; and even on the Hump run, B-29's flew in battle formation in an uneconomical effort to make up for past deficiencies.[7]

The primary target assigned for the mission was the Makasan railway shops at Bangkok. These had been rendered especially important by recent damage to the shops at Insein and the related campaign against rail communications; destruction of the Bangkok shops would hurt Japanese efforts in north Burma. But the deciding factors were operational rather than strategic: the mission, staged from the Kharagpur area, would not cut into Chengtu fuel stores; the 2,000-mile round trip and the Japanese defenses at Bangkok would give a real but not too severe test. Secondary targets included the Malagan railyards and the Central Station at Rangoon.[8]

The AAF Proving Ground at Eglin Field ran off a simulated "Bangkok mission" and forwarded the test results to Kharagpur. Where operational details suggested on the basis of the test ran counter to experience in the CBI, Wolfe's staff disregarded them. Bomb loads were lighter, fuel loads heavier than recommended: 5 tons of bombs (500-pound GP's in three of the groups, 500-pound M18 incendiaries in the fourth) and 6,846 gallons of fuel for each B-29. The resulting gross take-off load of 134,000 pounds was too heavy for the makeshift runway at Charra, so that the 444th Group had to stage, in equal elements, from the three other bomber fields.[9] Maintenance crews, working feverishly, had 112 B-29's ready to go by D minus 1.

* See above, pp. 52, 56–57.

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Take-off time was set at 0545*—dawn—to avoid high ground temperatures so dangerous for the R-3350 and to crowd the whole round trip into the daylight hours. Preliminary briefing was held on 4 June, the final briefing in the early hours of the next morning.[10]

The attack was launched approximately as planned in spite of an early ground mist. With planes leaving each base at one-minute intervals, ninety-eight were airborne within sixty-three minutes. At Chakulia, Maj. John B. Keller's B-29 crashed immediately after take-off, killing all crewmen save one. Fourteen bombers aborted, and a few others failed to reach target.[11] The field order called for an assembly and flight of four-plane elements in diamond formation.[12] Low clouds and haze interfered; some planes joined the wrong elements and as weather thickened others broke formation and went on singly. The route out, a dog-leg which crossed the Malay Peninsula to come at the initial point (IP) from the Gulf of Thailand, was maintained with some help from radar. Approaching Bangkok, the B-29's climbed from 5,000 feet to the stipulated bombing heights of from 23,000 to 25,000 feet.[13]

The first plane was over target at 1052, the last at 1232. The intervening 100 minutes one navigator described as "Saturday night in Harlem."[14] It was not an orderly affair. Heavy overcast obscured the target and forty-eight of seventy-seven planes bombing did so by radar, and since few crews had received instruction in radar bombing, "learning by doing" proved a hard way. No effort was made to maintain designated formations, and bombs were dropped from as high as 27,300 feet and as low as 17,000, sometimes after repeated runs.[15] Fortunately, Japanese opposition was too feeble to add much to the confusion. Heavy flak was barely moderate in quantity and was inaccurate, scoring only a holed rudder. To aid the mission, EAC had scheduled a dawn raid by B-24's against Bangkok's Don Muang airdrome but had scratched the attack because of weather. This failure hurt little. Fighter opposition hardly gave the B-29 gunners a decent workout: nine Japanese fighters made a round dozen of half-hearted passes while others coyly loafed along out of range. U.S. claims were correspondingly light—one probable, two damaged.[16]

The trip home was far more hazardous than the time over Bangkok, with the weather (it was the eve of the monsoon) and mechanical troubles proving more formidable than the Japanese. Maj. B. G. Ma-

* Time, unless otherwise indicated, is local.

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lone's B-29, after some engine trouble, was short of gasoline leaving the target. Malone set a course for Kunming, nearest friendly base, but his tanks ran dry near Yu-Chi, sixty miles short of his goal. Ten of the crew parachuted safely and, after receiving good treatment from the Chinese, were fetched in by Capt. Frank Mullen of Air Ground Aid Service, Kunming. Another plane crashed at Dum Dum in a forced landing; others landed away from home—twelve at wrong B-29 bases, thirty at fields outside the command.[17] Two planes ditched in the Bay of Bengal. One B-29 was headed for an emergency landing at Chittagong when its engines sputtered out. Capt. J. N. Sanders put the plane down into a smooth sea. A few minutes later Spitfires of Air Sea Rescue were hovering overhead and within forty-five minutes motor launches picked up nine survivors from rafts. Desperate searches by Sanders and his flight engineer failed to locate the other two crewmen nor were they found when the B-29 floated—repeat, floated—ashore next day.[18]

During the return another B-29 of the 40th Group experienced continued malfunctioning of its fuel-transfer system, a common ailment of the Superfort at that period. The pilot and radio operator were killed when the plane was set down in a rugged job of ditching, but ten men (there was a deadhead passenger aboard) crawled out or were blown free by an explosion, suffering injuries of varying degrees of severity. Eight of these rode out the night in two rafts and near noon picked up their two fellows, still afloat with no more aid than their Mae Wests and an empty oxygen bottle. Both were badly wounded, one incredibly so, and badly chewed by crabs. One, Sgt. W. W. Wiseman, had kept his weakened and delirious comrade, who could not swim, alive through a night of squalls only by most heroic and unselfish action. After another day and night of suffering the ten men were washed ashore near the mouth of the Hooghly River before dawn on the 7th. Two crewmen eventually contacted natives and through them the British, and an Air Sea Rescue PBY picked up the whole party. All hands credited the recovery of the wounded to a home-made survival vest designed by Lt. Louis M. Jones, squadron S-2, and worn by the flight engineer. Carrying essential supplies and drugs (the latter safely waterproofed in rubber contraceptives), the experimental vest had proved more practical than the standard E-3 kits. The whole story as it appears in the interrogations has much of the tone of a Nordoff and Hall sea saga.[19]

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The command assessed the mission as an "operational success"; that is, it considered the loss of five B-29's, with fifteen crewmen dead and two missing, as more than offset by the experience gained by the crews and the data obtained on B-29's flying under combat conditions. Strategic results were less gratifying: bombing had been spotty. Photo reconnaissance on 8 June showed that some sixteen or eighteen GP's had fallen within the target area, a few smack on the aiming point, the erecting and boiler shops. Four other bomb plots appeared at distances of 7,000 to 10,000 feet. The damage, to quote the tactical mission report, would cause "no noticeable decrease in the flow of troops and military supplies into Burma."[20] But XX Bomber Command had come out of its first test not too badly, and there was little time for holding post-mortems on the Bangkok shakedown.

On 6 June, before all the errant B-29's had been rounded up, Wolfe received an urgent message from Arnold: the JCS wanted an attack on Japan proper to relieve pressure in east China, where the Changsha drive was threatening Chennault's forward airfields, and to assist an "important operation" in the Pacific. A maximum effort was needed: how many bombers could Wolfe lay on by 15 June? by 20 June?[21] Previous policy had been to delay the first strike, and each subsequent "maximum effort," until the Chengtu stockpile could support a hundred sorties, and Wolfe had tentatively set D-day at 23 June.[22] Arnold's message indicated an emergency compromise and perhaps some impatience, and it caught XX Bomber Command at an embarrassing time. Stockpiling had lagged behind schedule from the start. The Bangkok mission had interrupted freighting by the tactical B-29's, and on 4 June General Stilwell, invoking emergency powers vested in him by the JCS, had diverted from MATTERHORN to Chennault the Hump tonnage (1,500 tons per month) guaranteed by ATC; Chiang Kai-shek had even wished Stilwell to take over the existing stockpile.*

In view of these circumstances, Wolfe replied that he could put fifty planes over the target by 15 June, fifty-five by the 20th.[23] Those figures did not satisfy Arnold, who insisted on a minimum of seventy B-29's for the earlier date and called for more intensive transport efforts.[24] But it was not only a matter of laying down fuel at Chengtu; Kharagpur could equip only eighty-six Superforts with the bomb-bay tanks needed for the long flight to Japan, and of that number some twenty-odd, on past performance, would fail to leave the forward

* See above, p. 87.

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area, others fail to bomb.[25] Wolfe nevertheless pushed his crews on the Hump line, cut down fuel consumption in the forward area, and put the 312th Fighter Wing on a dangerously meager ration of gas.* Meanwhile, maintenance units and crews worked overtime to condition as many B-29's as possible.[26]

Staging to the forward area began on 13 June and was completed only shortly before H-hour on the 15th. Of ninety-two B-29's leaving Bengal, seventy-nine reached the China bases; one plane with crew was lost en route. With four bombers already forward, this gave Wolfe a potential striking force of eighty-three. Staging bases were assigned as follows: 40th Group, Hsinching; 444th, Kwanghan; 462d, Chiung-Lai; 468th, Pengshan.[27]

The mission directive, dated 7 June, had designated as primary target the Imperial Iron and Steel Works at Yawata. This plant, most important single objective within Japan's steel industry, had long held top priority for the first strike, and although Hansell preferred Anshan, in Manchuria, as more vulnerable, the existing priority held.[28] This choice, as well as the timing, was influenced by the "important operation" in the Pacific, which turned out to be the assault on Saipan. It was fitting that the B-29's give indirect help in the capture of a base area earmarked for their use, and a blow at a target on the island of Kyushu should prove more effective in that respect than one against the Manchurian city. But Yawata was important enough without tactical considerations. Target folders estimated Imperial's annual production at 2,250,000 metric tons of rolled steel—24 per cent of Japan's total. This output was dependent upon three coke plants, of which the largest (the Minato-Machi with a capacity of 1,784,000 metric tons a year) was designated aiming point. The secondary target was Laoyao harbor, outlet for much coking coal, manganese, and phosphates.[29]

The B-29's left Bengal battle-loaded, requiring only refueling in China. Each plane carried two tons of 500-pound GP's, considered powerful enough to disrupt the fragile coke ovens by direct hit or blast. Washington, believing the B-29's lacked range for a formation flight to Yawata and back, about 3,200 statute miles, had ordered a night mission with planes bombing individually.[30] Bombing was to be done from two levels, 8,000 to 10,000 feet and 14,000 to 18,000 feet, and each group was to send out a few minutes in advance of the main

* See above, pp. 88–89.

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flight two Pathfinder planes to light up the target. Take-off time was set at 1630 which would put the planes over enemy-held territory only during darkness.[31]

Everyone who could get orders cut and thumb a ride headed for China. Stringent regulations imposed by the gas shortage prevented a wholesale exodus from Kharagpur, but many a staff officer found urgent business in the Chengtu area and eight general officers had gathered there by D-day. Hitchhiking on to Yawata was harder. Wolfe, himself grounded for the mission by Washington but with full power otherwise over the passenger list, was chary with passes for the big brass: "Blondie" Saunders, in command of his wing's first mission, was the only general to make the grade. Eight correspondents and three news photographers went along, briefed on Yawata and well primed with "background" after Bangkok.[32]

Take-off began a few minutes early, at 1616. Two groups approximated the scheduled two-minute intervals between departures, but the other two were quite slow in getting off. Seventy-five B-29's were dispatched, sixty-eight airborne. One crashed immediately but with no casualties, and four were forced back by mechanical failures. Individual planes had little trouble in following the outward course, a long straight haul with only a single turn near the IP, Okino Island, which was readily identified on the radar scope.[33]

At 2338 (China time) the first B-29 over the target gave the signal "Betty," meaning "bombs away with less than 5/10 cloud," but Yawata was perfectly blacked out and haze or smoke helped obscure the city. Only fifteen planes bombed visually while thirty-two sighted by radar. Crewmen saw explosions but could not locate them in reference to the aiming point.[34] The enemy was alerted long before the first Superfort arrived. Returning correspondents gave vivid firsthand descriptions of the battle over Yawata, but it was not a vicious fight.[35] Sixteen enemy fighters were counted by crewmen but only three fired at the bombers, and they scored no hits. The Japanese put up heavy flak and automatic-weapons fire, both inaccurate, to give minor injury to six B-29's. Searchlights, though spectacular and bothersome, gave little help to AA gunners.[36]

Forty-seven Superforts over Yawata jibed pretty well with Wolfe's original estimate of fifty, and the rest of the sixty-eight airborne could be accounted for by the sort of operational calculus he had used. Besides the four aborting and the crack-up at Pengshan, there had been

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a crash near Kiangyu, cause unknown, which wiped out the whole crew. Six other planes had jettisoned their bombs because of mechanical difficulties, two had bombed the secondary target at Laoyao, and five had bombed targets of opportunity.[37] Two planes of the 468th Group were listed missing but were later tracked down with great difficulty by search parties led by Capt. H. M. Berry. Both had crashed, killing all on board including Robert Schenkel, a *Newsweek* correspondent.[38]

The only known combat loss occurred during the return flight: Capt. Robert Root's B-29 developed engine trouble, and about dawn he put the plane down at Neihsiang, a friendly Chinese airfield near the battle lines. He called in the clear for U.S. fighter cover and with Chinese aid tried to get his bomber ready for flight again. His message brought no Americans but more than enough Japs. Within half an hour their fighters appeared, then their bombers, and after a few unhurried passes they left Root's plane a smoldering ruin. The crew, two of them wounded, were rescued by a B-25 from Hsinching. Harry Zinder of *Time*, who had ridden with them to Yawata and had been reported missing along with Schenkel, arrived with the crew in time to file a delayed story.[39] One other loss, not officially charged to the mission, was a B-29 reconnaissance plane which crashed when going out to photograph bomb damage. In all, the command had lost seven planes and fifty-five men without much enemy activity.[40]

A diversionary raid against enemy airfields by the Fourteenth had been scheduled but was thwarted by weather.[41] In spite of earlier fears, the Japanese made no retaliatory attack on the Chengtu fields. This was fortunate. Wolfe had elected to cut back gas deliveries to the 312th Wing in order to stage his maximum-effort mission, and in order to get all his planes back to India he had to borrow 15,000 gallons from the fighters' limited supply.[42] On the ground for several days, the B-29's offered a fat target, but the enemy's lethargy justified the gamble.

Photos made by the Fourteenth Air Force on 18 June indicated that bomb damage at Yawata had been unimportant. Only one hit had been registered on Imperial's sprawling shops and that was on a power house 3,700 feet from the coke ovens. Some damage had been done to Kokura Arsenal, to miscellaneous industrial buildings, and to business-industrial areas, which were referred to as "hospitals and schools" in the Japanese reports. The steel industry, prime strategic target, was

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still unhurt.[43] Indirect results, the intangibles of war, were certainly more considerable, if incalculable. Timed with the Saipan assault, the first appearance of U.S. planes over Japan since the Doolittle raid brought home to ill-informed Japanese citizens something of the realities of the war. Enemy radio reaction was sharp enough to indicate deep concern. The size of the attacking force was minimized and claims of B-29's (and B-24's!) shot down were headlined. There was one curious report, a broadcast claiming the destruction of a B-29 and capture of its crew consisting of six lieutenant colonels and a major—a lot of rank even for a Superfortress! Names, ranks, and hometowns were given accurately, the only error being that none of the alleged POW's had been on the mission. It took a lot of hasty telegraphing in the States to reassure next-of-kin.[44]

In the United States interest was more nearly consonant with the "firstness" of the mission than with its intrinsic importance. Once the bombs-away signal had been flashed, Washington headquarters had received a blow-by-blow account of the mission in a long series of cables which were relayed to Arnold, then in London.[45] Next day, still 15 June by U.S. time, the Yawata strike and the public announcement of the existence of the Twentieth Air Force competed with news of the Normandy beachhead in the headlines. If reports of this and other early B-29 strikes sometimes gave an overly optimistic impression, the fault did not lie with the Twentieth's public relations officers. The peculiar command system had dictated a policy of simultaneous releases by the Washington headquarters and by Kharagpur, through Stilwell, and there was inevitably some friction in its application.[46] But in respect to tone the Twentieth had profited again by early experience of the Eighth Air Force, whose glowing headlines had sometimes backfired. Communiqués were factual and XX Bomber Command PRO's were cautioned to hew to the line in releases to the press. Background materials should stress JCS control of the B-29 and the importance of the air-ground-sea team, rather than individuals, in ultimate victory. All concerned should use "extreme care" against overemphasis of B-29 accomplishments, recognizing that the plane and its organization were still in an experimental stage, and extravagances such as "the Wolfe pack" and "the dodo bird becoming an eagle" were to be eschewed.[47] Unfortunately, this sound policy had little effect on headline writers stateside, and conscientious reporters in the field often found their factual stories blown up by rewrite men

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at home. But, for 15 June there was news enough without inflation. Yawata (ADMEASURE I to the encoders) was no great blow but was an earnest of what was to come.

Two days after the Yawata show General Arnold informed Wolfe that, despite the depleted fuel stocks in China, it was "essential" to increase pressure against Japan. Immediate objectives were: a major daylight attack on Anshan, small harassing raids against the home islands, and a strike against Palembang from Ceylon. When Arnold asked for an estimate of the command's capabilities, Wolfe's reply was none too hopeful.[48] With low storage tanks at Chengtu (on 21 June XX Bomber Command had there only 5,000 gallons) he could not with his own resources build up for an all-out mission to Anshan before 10 August; if ATC would deliver 1,500 tons for the command in July, he could mount the mission by 20 August. Ceylon fields would not be ready before 15 July, and either the Palembang mission or the night raids would delay the Anshan attack.[49]

In spite of Wolfe's cautious estimate, Arnold on 27 June issued a new target directive calling for a 15-plane night raid over Japan between 1 and 10 July, a minimum of 100 planes against Anshan between 20 and 30 July, and a 50-plane mission to Palembang as soon as Ceylon airfields were ready. To meet this schedule, Wolfe was admonished to improve radically the operations of C-46's and B-29's on the Hump run.[50] Washington's judgment of maintenance and operations standards was based on records of the Second Air Force in the United States which Wolfe did not think realistic. He outlined conditions necessary for fulfilling the directive: build-up of his B-29 force and a flat guarantee of ATC Hump tonnage.[51] Even when it was decided that the command would get back its 1,500 tons for July, Wolfe's operational plan of 30 June set up the Anshan mission for 50 to 60 B-29's, not 100.[52]

Arnold received this plan on 1 July.[53] On the 4th General Wolfe was ordered to proceed immediately to Washington to take over an "important command assignment," and two days later he departed, leaving General Saunders temporarily in command at Kharagpur.[54] Coming as it did after repeated delays in getting the B-29 over Japan and at a time when Wolfe's estimates were consistently under those entertained by the Twentieth Air Force staff, this transfer had something of the appearance of a kick upstairs. Wolfe, with no combat experience but with an excellent engineering background and a thor-

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ough knowledge of the B-29, had been a natural selection for the job of shaking down the plane. Now that a high-level reorganization was in process at Wright Field, he was going back to head the Materiel Command, which would carry two stars; his experience with the B-29 under combat conditions would be invaluable in his new primary mission of expediting production and improvements of that plane. Arnold's own opinion may be best found in a letter to Spaatz some months later: "With all due respect to Wolfe he did his best, and he did a grand job, but LeMay's operations make Wolfe's very amateurish."[55]

The change in command had no effect on the first July mission, the small night raid ordered by Arnold. D-day, 7 July, marked the seventh anniversary of the Sino-Japanese "incident" and Chinese considered the choice of that day a courteous gesture. In truth, however, it had been determined by moon phase, weather, and modification of camera-carrying B-29's, not inter-Allied comity.[56] Because the main intent was to impress the enemy with an early follow-up on the Yawata strike, the small force of B-29's was to be split over Kyushu: primary targets included the naval dockyards and arsenal at Sasebo, the Akunoura Engine Works at Nagasaki, the aircraft factory at Omura, and steel works in the Yawata-Tobata area; Laoyao harbor, as before, was last resort target. Two B-29's were assigned the task of photographing the Miike Dyestuffs Plant at Omuta and all other planes carried nine photo-flash bombs in addition to their eight 500-pound GP's.[57]

Between 5 and 7 July twenty-four B-29's assembled at the forward bases, and eighteen took off from China on the afternoon of the 7th. One aborted with engine trouble, but seventeen bombed some target. Eleven planes dropped in the general area of Sasebo, but a twelfth, its radar dead, was off by fifteen miles. Single planes struck at Omura-Omuta and at Tobata, while the B-29 sent at Yawata bombed instead the secondary target at Laoyao. Two others, with fuel-transfer trouble, turned back to bomb Hankow, one missing it by twenty miles. Crewmen saw explosions in all the areas bombed, but because of undercast and defective photo-flash bombs, intelligence officers could learn little about damage from the strike photos.[58] Certainly the mission achieved no great amount of destruction, but it may have accomplished its main objective by demonstrating to the Japanese the vulnerability of Kyushu. In any event, the mission was cheap: no plane

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was hit by flak and only one received minor damage from eight Oscars and Tonys which attacked over occupied China. All seventeen effective sorties got back to the Chengtu bases safely and, thereafter, to Bengal.[59]

This was fortunate, for every plane would be needed for the "maximum effort" against Anshan. Arnold on 5 July had issued a supplement to the July target directive, specifically in regard to the Anshan and Palembang missions.[60] Saunders would have preferred a night go at Anshan, but on the 7th Washington reiterated the demand for a 100-plane precision daylight attack, which *must* be done in July.[61] Saunders, who based his estimates on "a realistic analysis of conditions," thought he could squeeze in the Anshan strike on the 30th by postponing Palembang until mid-August; Ceylon fields would hardly be ready in July anyhow.[62]

One group commander described the command's alternation of transport and combat operations as "getting money in the bank and then having our spree."[63] This time the bank would support a real Saturday night bust, for July was to prove a banner month for Hump tonnage. The bomber command got 976 tons from ATC and itself hauled 1,162 in C-46's, 1,063 in tactical B-29's, and 753 in B-29 tankers, for a total of 3,954 tons.[64] The real shortage was in planes, not in fuel. Washington was promising substantial reinforcements, but with some B-29's converted into tankers, Saunders would have on D-day only 127 combat planes in the theater.[65] To get enough of these into commission and at the forward bases to launch a 100-plane attack would tax his maintenance facilities. He proposed to knock off Hump operations ten days before D-day (instead of seven days as for Yawata) and to start staging forward on D minus 5, giving time for aborts from Bengal bases to be repaired and redispatched, and for adequate maintenance in China. This procedure, and his suggestion to stage back more leisurely than before, increased the danger of Japanese counterattacks on the Chengtu fields but Washington indorsed his plan.[66] The scheme paid off, and without drawing the retaliatory raids which Chennault feared. The B-29's started moving forward on 25 July, and by the 29th, 106 had landed at the China bases. One plane had crashed near Midnapore, killing 8 crewmen—but only 4 of the 111 bombers dispatched from the rear area had been stopped short of China by mechanical troubles and 107 were available for the strike.[67]

Primary target was the Showa Steel Works at Anshan in Manchu-

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ria—specifically, the company's Anshan Coke Plant, producing annually 3,793,000 metric tons of metallurgical coke, approximately one-third of the Empire's total. About half of this was used by Showa's own steel works, second in size only to Imperial's, and the rest for various industrial purposes in Manchuria, Korea, and Japan. Alternate targets tied in. The secondary was Chinwangtao harbor whence coking coal from the great Kailan mines was exported to Japan. Tertiary target was Taku harbor near Tientsin, which handled coal, iron ore, and pig iron. As last resort, bombers were to hit the railroad yards at Chenghsien, a possible bottleneck along a Japanese supply route. Aiming point at Anshan, as at Yawata, was to be a battery of coke ovens and again the bomb load was set at eight 500-pound GP's per plane.[68]

With a change in weather threatened, D-day was moved up to 29 July. Rain during the previous night mired the runway at Kwanghan and the 444th Group was unable to get off the ground at H-hour, but the other three groups got seventy-two planes up out of seventy-nine dispatched. One B-29 fell a few minutes later, killing eight crewmen. Mechanical difficulties prevented eleven bombers from reaching Anshan, of which one bombed Chinwangtao, two Chenghsien, four targets of opportunity, and four failed to bomb.[69] Sixty B-29's, flying high over enemy-held territory, got over Anshan. Most of them were able to hold the tight four-plane diamond formation and to bomb from altitudes reasonably close to the designated 25,000 feet. Bombing conditions as they went in were nearly ideal, with clear skies and still air, but the first wave messed things up by dropping a stick of bombs on a by-products plant just off the aiming point, which was thereafter shrouded with a thick pall of smoke.[70] Despite Anshan's importance, enemy opposition was not too rugged. Heavy flak caused but minor damage to a few B-29's and fighters scored only two unimportant hits. The Superfort's speed in the bomb run, 182 to 212 m.p.h. indicated, made it hard for fighters to jockey into position for a shot, and there was no determined boring in. The B-29 gunners claimed three probables and four damaged.[71]

The only combat loss occurred near the last resort target. Capt. Robert T. Mills' B-29, losing power in its No. 2 engine on the way out, shook out its bomb load over Chenghsien. Wounded there by heavy flak, the plane was jumped by five enemy fighters, including a P-40 with a Chinese-American Composite Wing (CACW) insignia, which shot out another engine. Mills gave the "abandon plane" com-

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mand. Eight men (not including Mills) parachuted into occupied China and with the aid of Chinese guerrillas walked out, reaching Chengtu a month later.[72] Chinese also helped save another B-29 which, after bombing Chinwangtao, had made a forced landing at a CACW field near Ankang. The plane was on the ground for five days while an engine, spare parts, tools, and mechanics came in by C-46 from Hsinching to effect an engine change and other repairs. Air cover was furnished by Fourteenth Air Force fighters, who shot down a Lily bomber during a night attack. With full assistance from the Chinese and American garrisons at Ankang, the B-29 took off on 3 August and returned to Chiung-Lai.[73]

On D-day the wet strip at Kwanghan had dried enough by ten o'clock for the 444th to get twenty-four planes up. Nearly five hours behind schedule, the group was too late for Anshan and so headed for Taku. Sixteen planes bombed there without any interference from the enemy; three bombed Chenghsien.[74]

The day's work, if not perfectly executed, was at least heartening to the command. Ninety-six B-29's had been airborne in a close approximation of the 100-sortie mission directed. Eighty planes had reached target areas, and though mechanical and personnel failures had kept the weight of bombs dropped to 73 per cent of that dispatched, the bombing looked good. A comparison of strike photos and photographs taken by Fourteenth Air Force planes on 4 August seemed to indicate a substantial amount of damage at Anshan, including hits and near misses on several coke-oven batteries, other related installations, and the by-products plant. Damage at Taku and Chenghsien too seemed substantial. The command had learned much about running a daylight mission, and all in all, the loss of five B-29's (three in China, two between India and China) seemed not exorbitant.[75]

The fifth and sixth MATTERHORN missions were run on the night of 10/11 August in a double-barreled strike at Palembang in Sumatra and Nagasaki in Kyushu, 3,000 miles apart. Palembang had been accepted as a target by the CCS at Cairo, and in the schedule of operations adopted by the Joint Chiefs in April it had enjoyed high priority as the only important POL target named.* Because of the extreme range of the target and the necessity of staging through an RAF base at Ceylon, the mission involved more planning and preliminary activities (save in the matter of fuel, which was furnished by

* See above, pp. 29–31.

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the British) than any flown by the command, and in execution the operational success outweighed the strategic results obtained.

According to target information available in early spring, the Pladjoe refinery at Palembang had seemed to be of highest strategic importance. With a reputed annual capacity of 20,460,000 barrels of crude oil, it was supposed to produce 22 per cent of Japan's fuel oil and 78 per cent of its aviation gasoline. Shortage of tankers limited the amount of avgas that could be delivered to active fronts and prevented export of any of the motor gas produced concomitantly, but destruction of Pladjoe would put a serious crimp in Japanese military and naval operations.[76] By mid-June some agencies had revised that appraisal. In Washington AC/AS, Intelligence and the COA, neither eager about the target earlier, thought that the changing tactical situation in the Pacific and the increasing shortage of enemy bottoms had robbed Pladjoe of its paramount importance. XX Bomber Command would have been quite happy to scratch a nasty mission which promised to hamper the prime effort against coke and steel objectives, but the JCS held firm: Arnold included Palembang in the target directive for July, ordering that the mission be flown as soon as the Ceylon fields were ready.[77]

Active planning for the mission, begun in May, had been complicated by those delays in airfield construction which have already been described.* During June and July, officers from XX Bomber Command, from AAF IBS, and from the CBI staff worked with the British in Ceylon to perfect arrangements. Earlier plans to use four, then two, staging fields were abandoned as construction lagged; it was finally decided to complete only one field, China Bay, and to run the whole mission through it. This involved extending facilities to two-group standards, with a fifty-six-point fueling system (brought in on loan from the CBI), fifty-six hardstands, and extra taxiways. Successive delays in this additional construction kept Palembang off the July schedule, but with completion assured by 4 August Arnold set a 15 August deadline and the 10th was finally named as D-day.[78]

Washington had stipulated a daylight precision attack at the command's nominal strength, 112 aircraft. With only one field available, this would have meant staging in waves, a very ticklish job where minor variations from a tight schedule could spell disaster. Warned of probable high losses, Twentieth Air Force Headquarters had relented

* See above, pp. 71–73.

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and on 27 June directed a dawn or dusk strike by at least fifty planes.[79] Further negotiations by XX Bomber Command effected other changes in the directive so that the operational plan finally adopted called for a night radar attack.[80] Part of the force, briefed by a USN expert, was to mine the Moesi River, through which all Palembang's exports were shipped; secondary target was the Pangkalan refinery and last resort target was the Indarung Cement Plant at Padang, both in Sumatra.[81] Field orders to effect these plans were completed on 1 August, and final preparations were rushed through with the friendly cooperation of the British. Fuel for the mission and construction costs might be charged on reverse lend-lease accounts, but the RAF went far beyond the bare essentials, virtually giving over the base to the Americans, with housing, messes, transportation, and with available whiskey rations and best wishes thrown in.[82]

On the afternoon of 9 August fifty-six B-29's landed on China Bay's 7,200-foot strip and wheeled onto allotted hardstands, directed in without radio and without an error by a control team recruited from XX Bomber Command. Next afternoon at 1645 a plane from the 462d Group pulled up off the runway, and within eighty-four minutes fifty-four B-29's were airborne with only one washout, a remarkable bit of flying on a strange and crowded field. Forty minutes later Capt. I. V. Matthews' B-29 returned with a leaky engine, got patched up, and was again winging for Sumatra within a couple of hours.[83]

The bombers, proceeding individually, flew a straight track to Siberoet Island just below the equator, then bore eastward across Sumatra. A dozen planes failed, for various reasons, to reach a target, but two bombed Pangkalanbrandan, one an airdrome at Djambi, and thirty-nine reached their goal.[84] Palembang had no lights and some undercast, and the one B-29 equipped with flares miscarried, but thirty-one planes bombed either by radar or visually through patch clouds. Crewmen later reported having seen explosions and fires through breaks in the undercast, but their fleeting observations were none too precise and the strike photos were too poor to be of much service.[85] Eight planes of the 462d Group found clear flying over the Moesi by dipping under a 1,000-foot ceiling and laid 16 mines in a good pattern with "excellent results."[86] The B-29's met antiaircraft fire in various places and, for the first time, ground-to-air rockets. Crewmen reported seeing 37 enemy planes, some of which followed them back for 350 miles, but not a B-29 was scratched.[87]

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Nor were operational losses as bad as had been feared. The mission had been coded BOOMERANG, perhaps in pious hope that the planes would come back from the long round trip of 3,855 air miles to Palembang, 4,030 to the Moesi. Because of the extreme range the command had lightened the useful load to a single ton of bombs or mines and had filled gas tanks to capacity; even so, the loss of some planes on the return trip was expected. In anticipation the British had set up an elaborate air-sea rescue force comprising submarines, a cruiser, destroyers, lighter vessels, and various aircraft types. Several Superforts turned back without bombing because of threatened fuel shortages, but only one went down at sea, and there rescue precautions paid off. The B-29 sent out an SOS giving its position ninety miles out of China Bay and somewhat off the return track. An intensive search was finally successful when planes and HMS *Redoubt* homed in on a "Gibson girl" signal from a life raft on the morning of the 12th. One gunner had been killed in the ditching but the other crewmen were picked up.[88]

Operationally the mission had been very successful; the skill with which it had been planned and executed was indicative of what XX Bomber Command had learned since the over-water flight to Bangkok. The command had never been keen on the assignment, and Washington's insistence on a mission which under existing conditions had little chance of decisive results seems now to indicate a lack of flexibility in target priorities. The attack did little to speed the war. Photo reconnaissance was not flown until 19 September, by which time it was difficult to assess bomb damage accurately, but it appeared that in spite of earlier impressionistic reports of large fires, only one small building destroyed could definitely be credited to the strike. That and several probables were small returns for the effort.[89]

This disparity between effort and results XX Bomber Command realized, and on 24 August, long before damage assessment had been made, the command recommended the abandonment of China Bay as a staging base. Eventually convinced, Washington on 3 October gave permission for the command to remove all its own equipment, leaving behind for possible future use the fuel-service system which belonged to AAF IBS. But the B-29's staged no other raids through Ceylon. The cost of developing China Bay into a VHB base for a single fruitless mission, whether figured in terms of effort and materiel or funds, is a glaring example of the extravagance of war.[90]

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The reduction of BOOMERANG from a 112- to a 56-sortie mission left aircraft available for a strike elsewhere. Saunders had learned on 21 July that he would get an additional 1,500 tons laid down in China by ATC and next day informed Arnold of his capabilities for August: a small night incendiary attack on Nagasaki early in the month, a saturation incendiary attack on the Yawata-Tobata area on the 20th, and a daylight strike at Anshan on the 30th—these in addition to Palembang. Yawata-Tobata and Anshan would be "major" efforts, calculated each at sixty-eight planes dispatched, fifty-five over target. Washington found the sortie rate "gratifying" but the effort too diffuse, and was willing to scratch Nagasaki to add weight to the other missions. This Saunders opposed, and on 28 July Twentieth Air Force Headquarters approved his schedule, but demanded eighty planes dispatched on the major strikes instead of sixty-eight.[91]

For psychological reasons the small night raid was synchronized with the Palembang mission. Nagasaki was to be chosen as target for the second atom bomb (9 August 1945) because that city had previously suffered little from air attacks. Yet in the summer of 1944 Nagasaki, with its crowded shipyards, docks, and military installations, carried high priority among urban industrial area objectives. Because of the reputed vulnerability of Japanese cities to fires, Twentieth Air Force planners had expected to combine saturation incendiary attacks, delivered by night, with precision bombing. Somewhat to the concern of Washington, the bomber command had so far relied wholly upon high-explosive bombs; now Saunders proposed to use fire bombs on Nagasaki, which Washington earlier estimated could be "saturated" with seventy-six tons.[92] The Point Island military storage area at Shanghai was named as secondary target in spite of the possibility of criticism should strays hit in Chinese residential districts or POW camps nearby.[93] The Hankow docks were chosen as last resort target. This was a gesture to Chennault, who had earlier asked that the B-29's hit key positions in the Japanese supply line, and who was to repeat his request before the Nagasaki mission was run.*

Staging for Nagasaki, as for Palembang, reflected increasing operational skill and resulted in a stronger effort than the twenty-five sorties promised. Of thirty-three bombers leaving Bengal, thirty-one arrived at forward bases; one was lost en route with two crewmen killed. Bomb load was heavier too, with 5,816 pounds of incendiaries

* See below, pp. 112–13.

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and frags per plane.[94] Twenty-nine planes got off in thirty-six minutes, of which two returned early, three bombed targets of opportunity, and the other twenty-four, flying out individually, released their bombs over Nagasaki. The city, blacked out and under light cloud cover when the first plane arrived, became progressively harder to see so that only eight planes bombed visually.[95] As on other night missions, results could not be accurately estimated, but later intelligence was to show them not too significant. Enemy resistance, both by flak and by interceptors, was weak and not a single B-29 was scratched. Yet the air battle was memorable for one reason. T/Sgt. H. C. Edwards knocked off a Jap fighter at 600 yards with the first burst from his stern chaser 20-mm.; the fighter was seen to crash in flames and Edwards was credited with the command's first official kill.[96]

On the way home Capt. Stanley Brown's B-29 became lost after some mechanical trouble and early next morning, almost out of gas, landed at Hwaning, held by the Chinese but within easy reach of three enemy fields. The plane bogged down in mud at the end of the short strip, and Japanese strafers knocked out two engines. But the 312th Wing sent out a fighter cover which shot down three enemy planes and scored heavily on Jap fighters parked on one of the adjacent fields. Fuel, parts, and mechanics were flown in, and the B-29 was repaired and stripped to its bones. Meanwhile, the Chinese had jacked it out of the mud and slowly inched it down the strip, building a short runway by sinking 4,500 railroad ties in the soft spots. On 23 August the plane with only four crewmen aboard lifted off the ground and flew into Chiung-Lai to complete a most extraordinary job of salvage.[97]

The build-up for the seventh mission had begun well before the combined Palembang-Nagasaki strikes, and by 1 August Saunders had hopes of meeting Arnold's demand for eighty sorties.[98] The tactical situation in China threatened for a time to interfere. And, after vainly attempting earlier to have the B-29's sent against Hankow's waterfront,[99] Chennault was now asking for 300 sorties against Hankow and Wuchang.[100] Saunders, consulted by Arnold, declined to pass judgment on the strategic worth of Chennault's plan but reported that such diversion of effort would make it impossible to comply with the bomber command's current directive.[101] When his second request was refused, Chennault on 10 August proposed that the command be shifted from current attacks on steel to a counter-air campaign or be

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withdrawn from China.[102] Arnold's staff was interested in the aircraft industry and on 5 August had asked Saunders' opinion about substituting the Omura Aircraft Plant for Anshan for the eighth mission. This Saunders was loath to do, preferring to finish off the Showa works, Yawata, and Penchihu before turning to the admittedly important airplane factory. Washington abided by this decision, perhaps a little suspicious of Chennault's motive: Stratemeyer, after a visit to the Fourteenth's headquarters, expressed to Arnold the opinion "that Chennault's repeated requests for B-29 missions against Hankow are for use of those airplanes primarily from consideration of their own supplies being available in China."[103] At any rate, Saunders' immediate objectives stood.

He had originally planned his seventh mission as a night incendiary attack on the Yawata-Tobata urban area. Within his staff a number of officers, perhaps the majority, had come to favor the employment of the Superfort exclusively as a night bomber. So far, crews had not been able to deliver rated bomb loads on lengthy missions flown by day in formation, and these staff officers believed a moderate bomb load dropped by radar at night was more effective than a minimum load carried by day. Some even wished to increase the weight of effort by converting more B-29's into tankers, and with larger fuel supplies in China to send the whole force out more frequently, tankers sandwiched in with the tactical planes in night saturation attacks.[104] Preliminary appraisal of photographs of Anshan taken after the 29 July strike seemed to strengthen the case for precision daylight bombing (though from the same pictures Chennault concluded that the bombing of the Showa works was futile), and on 4 August the command asked for permission to run the Yawata mission as a daylight attack on the Imperial Iron and Steel Works. The Twentieth acquiesced, "delighted with the change."[105]

Flying in formation in a high-altitude approach through enemy territory and bombing from 25,000 feet, the B-29's could carry only a light load. To avoid setting a standard load determined by the poorest crew's performance, Saunders inaugurated a new policy by prescribing a one-ton minimum and allowing group commanders to set the loading according to the known efficiency of each plane and crew. This varied considerably—on the Yawata mission individual B-29's would burn as little as 6,100 gallons of fuel, as much as 7,600—and the

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flexible loading scheme allowed the bombers to carry an average burden of 6.3 x 500-pound GP bombs.[106]

By D-day, 20 August, ninety-eight B-29's had gathered in the forward area with one lost en route from India. At take-off, three groups got away without accident, but the eighth plane of the 462d Group smashed up, blocking the south end of the runway. By afternoon it was possible, by lightening loads, to get eight more planes up over the wreckage and, joined by five aborts from other groups, they went on to Yawata for a night attack. With seventy-five B-29's airborne for the day mission and thirteen for the night, the command had more than met requirements.[107]

On the daylight run, sixty-one planes dropped ninety-six tons of high explosives on the target area; six others hit the secondary (Laoyao) or last resort (Kaifeng) or random targets. Intense heavy flak over Yawata knocked down one B-29 with a direct hit and damaged eight. Fighter opposition was rated "moderate" but got three more Superforts, one with a combination of aerial bombing and gunfire and two in the first case of ramming experienced by the command. A Nick came in level from twelve o'clock, banked sharply, and drove its wing vertically into the outboard wing section of a B-29 flying wing position. Both planes disintegrated and the flying debris caught the No. 4 plane in that formation and sent it spinning down. Observers were uncertain but thought the ramming intentional. B-29 gunners claimed seventeen kills, thirteen probables, and twelve damaged (17/13/12).[108]

That night ten more B-29's got over Yawata to drop an additional fifteen tons of bombs without being harmed by the enemy. Strike photos taken by the daylight formations seemed to show hits on two coke ovens, but according to Japanese records the damage was not serious.[109] Losses, on the other hand, were heavy: besides the four B-29's destroyed over Yawata, ten were lost to other causes and ninety-five airmen were dead or missing. Later it was learned that one crew had bailed out east of Khabarovsk. The U.S. embassy at Moscow had reported an earlier instance in which a wounded Superfort had been forced down near Vladivostok by Soviet fighters, and by the end of 1944 two others (including the much-publicized *Gen. H. H. Arnold*) had landed at that city. The Soviets, at peace with Japan, followed international law in interning the crews and planes,

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but their subsequent conduct was not wholly consistent: they allowed the flyers to "escape" via Tehran, but kept the B-29's, which after the war were to serve as models for a Red Air Force bomber, usually identified as the Tu-70.[110]

After the hasty reappraisal of MATTERHORN target objectives provoked by Chennault's proposals, Saunders continued his plan for a return to Anshan.[111] Scheduled for 30 August, D-day was twice postponed, once because of Chennault's concern for possible Japanese attacks on Chengtu bases, once because of weather; final choice was 8 September.[112] Plans for the strike were approved by Washington on 29 August.[113] On that day Maj. Gen. Curtis E. LeMay assumed command of XX Bomber Command.[114] LeMay, who had had an imposing record as a heavy bombardment officer in the ETO, had been slated for a B-29 job earlier, but had stayed on in Washington to work on the long-heralded reorganization of the command.[115] His arrival did nothing to change plans for the Anshan show.

Saunders, in answer to Washington's needling about his aircraft-over-target rate had announced a policy of dispatching every B-29 fit to fly.[116] That policy, and improved maintenance, were reflected in Anshan II. By 8 September, 115 B-29's had gathered in the forward area and 108 got off the runways. Of these, 95 reached Anshan to find good weather, 90 dropped 206.5 tons of GP's at the Showa works, 3 bombed other installations, 5 hit at the Sinsiang Railroad Yards, and 3 others at various targets of opportunity.[117] Enemy flak over Anshan was ineffective and Japanese fighters less aggressive than those encountered over Kyushu. Total losses for the mission were four: a crack-up near Dudhkundi on the way up; two forced landings in China, one destroyed on the ground by enemy planes and one partly salvaged; and a plane listed as missing. The crew of this last plane later walked out with the loss of only one man. In return, B-29 crews, their central fire-control (CFC) system working smoothly, claimed 8/9/10.[118]

A B-29 photo plane got some excellent shots on D plus 1 which showed a considerable amount of damage to the Showa plant. Of the sixteen batteries of coke ovens, three were thought to have been decommissioned for a year (one on 29 July, two on 8 September), and three for six months. Others would be hurt by damage to related installations, and the by-products plant had been hit hard. All in all,

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command intelligence officers computed that the two attacks had cost Showa 35.2 per cent of its coking output, which would depreciate total Japanese rolled steel production by 9.3 per cent.[119]

Whatever the eventual results of the mission, its most immediate effect was to bring out the Japs in their first counterattack on the command's forward bases. Both in Washington and the CBI there had been anxiety since the initial planning days that the enemy might hit those bases while they were crowded with B-29's. The 312th Fighter Wing with its two groups (33d and 81st) seemed capable of turning back any daylight raid but as yet had no night fighters. Shortly after midnight following the Anshan attack, Japanese bombers came over Hsinching and attacked Forward Echelon Headquarters, storage areas, and the parked B-29's. Aided apparently by ground signals, the intruders made four runs, dropping frags and HE bombs to inflict minor damage on one Superfort and a C-46 and to wound two soldiers. No contacts were made by U.S. fighters.[120]

General LeMay had gone along on Anshan II, an interested observer of the crews and planes he commanded and of the enemy he faced. If what he saw was encouraging, it did not deflect him from his stated purpose of revising XX Bomber Command's tactical doctrines and of instituting a thorough training program. Specifically, he intended to substitute for the current four-plane diamond formation a twelve-plane formation similar to one he had used with his heavies in the ETO. He proposed further to follow Eighth Air Force practice by subordinating night missions, so far numbering four of the command's eight strikes, to daylight precision attacks. This would not mean the abandonment of radar bombing, so vital in variable weather. LeMay's doctrine called for "synchronous bombing" in which both the bombardier and radar operator followed the bomb run in, with visibility determining who would control the plane during the crucial seconds before release.[121]

Precision bombing required training more sustained than the sporadic sessions which the command's crews had undergone, and fortunately new arrangements for nourishing strikes out of China would release B-29's and their crews from much of the Hump transport duty which had handicapped training. On 5 September LeMay had ordered each group to select six lead crews (later increased to eight) upon which other crews in a formation would drop. A week later a school was set up at Dudhkundi, occupied since early July by the 444th

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Group, with instructors drawn from the command's staff and from specialists brought out to the theater on TDY. Ground training and a simulated mission and critique on each of ten successive days made the eleven-day course at "Dudhkundi Tech" both strenuous and valuable. Meanwhile, the other crews of the four combat groups had been working with the twelve-plane formation and had made some progress when training was interrupted for the ninth mission.[122]

When LeMay took over at Kharagpur, the weight and target of that mission had not been determined. By the time Anshan II was run, he had decided that he could make only one other major strike in September, between the 25th and 27th. Headquarters, Twentieth Air Force, was engaged in revising target priorities and, anticipating an early report from the COA, asked LeMay to consider shifting from coke ovens to aircraft factories. Two days later, on 15 September, Washington temporarily tabled this suggestion by forwarding to Kharagpur a COA recommendation that the next mission be directed against coke ovens at Anshan and Penchihu.[123] LeMay elected to finish off Anshan, still an important target and one well suited to an economical trial of the new bombing techniques.

LeMay had promised a 100-plane strike. On D-day, 26 September, he had 117 B-29's forward, plus 1 photo plane, and counting a few late stragglers, 109 bombers were airborne that morning. Both figures represented improvements over Anshan II; not so the mission as a whole. Weathermen had predicted no worse than 4/10 undercast over Anshan, but a cold front moved in and blanketed the target, making it difficult for the bombers to maintain the new formation. Eighty-eight planes got over Anshan but only seventy-three bombed the Showa works, all by radar. Subsequent photographic coverage indicated absolutely no new damage.[124] Two planes bombed Dairen, four Sinsiang, and nine bombed various targets of opportunity.[125] Enemy planes over Anshan were very active but ineffective; not a single B-29 was lost from any cause on the mission and this was some solace for the bootless strike.[126]

Even so the enemy had the last word: that night a few bombers swept into the Chengtu area to drop three strings of bombs and damage five Superforts, two of them seriously. The Chinese warning net had tracked the Japanese planes in from Hankow airfields and the 317th Fighter Control Squadron at Chengtu had ample time to alert command personnel. But the one P-47 up could not make contact.[127]

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The 312th Wing had suffered with other China-based units from lack of supplies, and in the interest of economy of fuel one of its P-47 groups had been exchanged for the 311th Fighter Group, equipped with P-51B's. Chennault, reluctant to tie down two full groups for the static defense of Chengtu, had disposed part of the wing forward where the planes could take a more active part in the war, and events were to prove that this policy constituted no serious danger to the B-29 fields. The night raids of 8/9 and 26/27 September set the pattern for later Japanese raids, which usually followed B-29 missions. To guard against such sneak tactics, LeMay pressed for night fighters and 40-mm. AA guns. On 6 October (the eve of a third enemy raid), the first P-61's of the 426th Night Fighter Squadron came to Chengtu, but it was mid-November before the 843d AAA Battalion arrived to round out an integrated defense force. Japanese attacks were to continue until 19 December, but on the same light scale: in ten raids only forty-three enemy planes were counted and the damage done was more annoying than serious.[128]

Anshan III marked the end of the first phase of MATTERHORN operations. That fact is clearer in retrospect than it was in late September 1944, but even then there were indications of impending changes: a reorganization of the command, an improved logistics system, a shift in target priorities, and a closer coordination with operations in the Pacific. Had the command paused to take stock, it could have found little gratification in its strategic accomplishments. According to schedules hopefully concocted in Washington in April, coke and steel targets should have been destroyed. Only two missions had been really successful, Anshan I and II, and there had been no important dislocation of the Japanese steel industry. Yet, the command had learned much, as the operational record (as opposed to strategic results) of the later missions had shown. The shakedown was over, and with a revamped organization XX Bomber Command would in succeeding months more nearly approximate in the weight of its strikes the expectations of the original MATTERHORN planners.

Reorganization

From its inception the B-29 project had been an experimental organization, and this characteristic XX Bomber Command inherited along with part of the project's personnel. AAF Headquarters looked on the command as a prototype for the XXI, XXII, and subsequent

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VHB commands. At Salina and Kharagpur this attitude was as deeply ingrained as at Washington; XX Bomber Command's historian reflected a widely held view when he referred to the command as "a great combat testing laboratory."[129] It was a crude sort of lab, where trial-and-error methods were more common than the scientist's unhurried precision, but the essential spirit of testing results by such measurements as were available was not lacking. Combat testing involved two closely related problems, one tactical and one administrative. A new weapon, the B-29, had to be proved and modified, and a tactical doctrine formulated and refined; something of the command's efforts in these respects has been told in the story of the first nine missions. Less spectacular but hardly less important to the success of combat operations were parallel efforts to perfect the administrative structure which supported the B-29 strikes. This process was a continuing one, but three distinct stages may be noted: the establishment of the 58th Wing in June 1943, the organization of XX Bomber Command in November, and a thorough reorganization which dragged through the following summer. At the end of September 1944, the date chosen to mark the end of the first phase of operations, that reorganization had been substantially effected, though another month or so was required to complete the task.

When staff officers in Washington and Salina had worked out the command's original structure in the autumn of 1943, they had no exact precedents to follow. They started with T/O's borrowed from heavy bomber units and tried to expand them to fit anticipated needs of the B-29. In practice, these T/O's proved less than perfect, in some particulars overmanned, in others undermanned. Remedial action was slow; here the fault seems more often attributable to AAF Headquarters than to the command. Inadequacies in maintenance and service units in particular were responsible for delays in combat operations. The need to step up the weight of attack spurred Washington to a belated correction of deficiencies which had been recognized in the Salina training period and had become more painfully obvious in India.

Two ideas had profoundly affected the original structure of XX Bomber Command: 1) it should be organized as a self-contained, independent force of great striking power, mobility, and flexibility, more akin to an overseas air force than to a conventional bomber command; and 2) it was to operate in a "primitive" theater.* These guid-

* See above, pp. 41 ff.

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ing ideas had made for important differences in the command headquarters, in the internal structure of the bombardment groups, and in the functions and composition of the service groups. In each case, however, modifications made by the end of October 1944 tended to revert to more normal patterns. Changes in plans for deployment, which limited the command to a single wing and designated subsequent VHB units for the Marianas, made some consolidation of wing and command headquarters seem logical; here reorganization was a relatively simple task of compression. But in respect to the bombardment and service groups, where the command sought inflation rather than deflation, the increasing shortage of manpower in the United States imposed a formidable barrier. Reorganization was not accomplished in one sweeping act, so that it becomes convenient to treat separately of the service groups, the bombardment groups, and command headquarters, in that order, and of the transport system which had important bearings on all phases of the command's administration.

In respect to its flight echelon, the 58th Wing was normal enough, with four bombardment groups of four squadrons each. Seven B-29's per squadron gave the wing 112 UE aircraft and 50 per cent reserves brought the total up to 168 planes. Double crews and a crew of eleven, including five officers, made for a large number of rated officers, but this was a difference of degree, not of kind, from the standard B-17 or B-24 unit. It was in the maintenance and service elements that the innovations and the grief appeared.

Conventionally, first and second echelon maintenance, service, and supply were performed by the ground personnel of bombardment squadrons, third and fourth by service groups assigned to an air service rather than bomber command. In the interest of flexibility, mobility, and independence of theater support, this pattern had been discarded in XX Bomber Command. Each crewman was trained in some specialty other than his primary job in order to provide some constant maintenance of the plane. The ground personnel were separated from the flight echelon of the bombardment squadrons and formed into maintenance squadrons (sixteen in all) which could be moved about as needed to work on any B-29's in the wing. For more advanced service, maintenance, and supply, there was to be for each VHB group a service group (special), presumably to be attached to the command rather than to a theater air service command; in addition

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to its normal functions, this unit would perform housekeeping duties for the B-29 base.

At Salina there was no questioning of the basic concept of these experimental units, though experience had soon indicated that the composition of the maintenance squadrons would have to be modified. Two regular service groups, the 25th and 28th, were assigned to the command but were shipped out before they could be reorganized according to the new T/O's. The tables had been based on tests made at the AAF Tactical Center at Orlando in February 1944; tentative copies sent to Salina for comments had elicited some suggestions for change, but Washington did little in the way of revision. It was expected that the two service groups would be split into four service groups (special), using as fillers personnel released by the contemplated reorganization of the maintenance squadrons.[130]

The 25th and 28th Service Groups, shipped early to set up house for the combat groups, were delayed en route by engine trouble on their transport and arrived in Bengal in May, six weeks late,[131] only to be assigned to Stratemeyer's ASC. This was not according to Arnold's plan, and an appeal from Wolfe brought an answer specifically delegating to XX Bomber Command responsibility for third echelon service, maintenance, and supply, and inferentially control of the service groups. This policy was later described in detail in Stilwell's GO No. 55, 7 June 1944, which gave the theater ASC responsibility only for fourth and fifth echelon functions.[132]

The T/O approved for the service group (special) on 15 April called for an organization of 710 officers and men.[133] To create four such units from the 25th and 28th groups would require additional personnel. A delay in authorization for reorganization of the maintenance squadrons blocked that expected source of manpower, and on 9 May Wolfe asked Washington for some 97 officers and 453 men and a directive.[134] AAF Headquarters refused to supply the personnel, save for central fire control and radar specialists, and funneled the directive through theater headquarters where it was delayed for weeks.[135] Final authority for the changes was given by Stratemeyer on 23 June; Wolfe's order went out on the 30th and was rapidly accomplished.[136]

Four service groups (special) were formed (25th, 28th, 80th, 87th), one for each VHB base. The internal structure of the group was

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streamlined by regrouping the dozen or so existing units into three flexible squadrons—headquarters and base service, engineer, and materiel. No doubt the consolidation of units squeezed out fat which could be spared, but the bomber command considered that the new group was inadequate to its task of administration, if not of maintenance and supply. Actually, its tasks combined those of a service and of an air base group, including administration, mess, personnel classification, PX, special services, chaplains, etc.[137] To man the new units from bulk allotments without specially requisitioned fillers required much ingenious juggling of personnel, but by reassignment within the command, reclassification, detached service, in-service training, and exchange with AAF IBS, the new tables were filled and the Bengal bases settled into a more orderly life. To provide for the four advanced bases, Washington allocated to each a bulk assignment of 150 officers and men.[138]

The reorganization of the bombardment groups went more slowly, though the composition of the maintenance squadrons had been challenged before they left Salina.[139] The number of specialists in various MOS categories had proved unequal to the task of maintaining a complex and untried bomber; shortages of maintenance personnel had impeded the flight training program with an excessive planes-out-of-commission rate and remedial action was recognized as a "must." Rather than interrupt the overseas movement, the command shipped out with the 16 maintenance squadrons unchanged but with a promise from Washington that a new T/O and about 550 additional personnel would be supplied when the command reached India. Men rendered surplus by the changes would supposedly be used as fillers in the new service groups.[140]

In India, command personnel officers found that though they had enough men to effect the desired augmentation of maintenance squadrons, they were still short in certain MOS categories, notably in mechanics for the temperamental R-3350. Washington, requested to fill the vacancies, replied that a radical revision of the VHB group was slated for July and that in the meanwhile alleviation would be provided only in the case of a few specialties, not including power plant mechanics.[141] The "radical revision," calling for a group of three VHB squadrons with ten UE aircraft each and for a merging of the maintenance and bombardment squadrons, had been approved by AAF Headquarters in a new T/O&E dated 17 April. It was the end of June

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before Wolfe received a copy of these tables and even then he had no directive to adopt them. The bomber command had to struggle along with maintenance squadrons rendered "lame duck" by impending changes, their mechanics overworked as India's hottest season played havoc with the R-3350 engine.[142]

The new T/O&E provided for thirty aircraft for three squadrons instead of twenty-eight for four, and would thus increase striking power and cut down on overhead personnel; here there could be no justifiable complaint. But the new squadron of 615 officers and men had a ground echelon of only 349 as opposed to the maintenance squadron's 390, long recognized as inadequate. Group commanders, asked for comments, uniformly recommended substantially larger ground echelons. Some alleviation was promised in a change in the tables approved on 3 August, which authorized a squadron of 644 with a gain of nearly 30 ground personnel.[143]

The long delay in agreeing on and instituting the projected general reorganization stemmed in part from the distance between Washington and Kharagpur and from changes in the command's leadership. The outlines of the reorganization had been worked out during Wolfe's incumbency, and when he returned to Washington early in July, he was able to present the field point of view and to report back to Saunders the improvements contemplated. Later in the month Arnold sent his chief of staff, General Giles, to India to make detailed arrangements, and by 1 August an acceptable plan had been drawn up. In return, two of Saunders' personnel officers went on TDY to Washington, but final action was still held up pending Saunders' relief by General LeMay.[144] LeMay arrived on 29 August but it took several radios to pry a final commitment out of AAF Headquarters.[145] On 20 September he was directed to effect the following changes: reorganization of the headquarters of the four VHB groups (40th, 444th, 462d, 468th) according to the T/O&E of 29 June 1944 with certain augmentations; the disbanding of the sixteen maintenance squadrons and of four VHB squadrons (395th, 679th, 771st, and 795th); and the reorganization of the other twelve VHB squadrons according to the tables described above, as amended on 3 August.[146]

The changes were put through as rapidly as possible, not without some feeling that the command had too few maintenance personnel. The return to the standard-type bombardment squadron marked an abandonment of the concept of "flexible" maintenance now rendered

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obsolete for the VHB program in general by the elaborate permanent installations being built in the Marianas. The new tables did away also with the doubly trained crews, capable of performing first and second echelon maintenance as well as fighting their plane. That training had shown up well in the Palembang mission and in cases where planes made emergency landings in China, but the extra cost in training (for example, forty weeks for an electrical specialist-gunner as opposed to five weeks for a gunner) was too great for mass production of VHB crews.[147]

To make most efficient use of the streamlined units LeMay issued on 10 October a new formula for the operation of the four VHB bases in India,[148] a formula which owed much to his previous experience in the ETO. Each of the fields housed a bombardment group, a service group, a weather detachment, and an AACS detachment. The VHB group commander was in charge of the base, with the air executive, normally the deputy of the group, as second in command. The ground executive was usually the service group commander. Personnel on the base were regrouped functionally without loss of unit integrity: for example, the ground echelons of VHB squadrons and the engineer squadrons of the service groups were integrated to perform maintenance and service for B-29's assigned to the base. Designed to spread the work more evenly, this system worked well; its success was indicated in the increasing weight of attacks and the decreasing rate of planes out of commission.[149]

Meanwhile, command headquarters had undergone extensive changes in structure and personnel. When Saunders succeeded Wolfe as commanding general of XX Bomber Command, no replacement was provided for the former's previous job as commander of the 58th Wing. With Washington's consent, Saunders on 13 July amalgamated the two headquarters, attaching personnel from the 58th to appropriate sections of the command's staff. This marked the *de facto*, though not the formal demise of the 58th Wing.[150] By a directive of 6 August, XX Bomber Command's headquarters experienced a "functional realignment" to conform more closely with the current pattern followed in the conventional air force. This was in recognition of the fact that though possessing only four combat groups, the command performed some air force functions. The older staff system with four "A's" reporting directly to a chief of staff was discarded; staff sections were regrouped under three deputy chiefs of staff (for administration;

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operations; and maintenance, supply, and services), with some sections reporting directly to the chief of staff or commanding general.[151] During the next two months authorized strength of the headquarters and headquarters squadron was set at 183 officers and 417 men. This showed a decrease of about 250 from the combined strength of the headquarters of XX Bomber Command and the 58th Wing (now formally deactivated), but it was still a numerous body, identical in size with that of the 3-wing XXI Bomber Command and justified only because of the XX's ASC duties and of the necessity of maintaining a forward area headquarters.[152]

Changes in structure had been accompanied by a considerable turnover in personnel. The command had been fortunate in long maintaining a remarkable degree of homogeneity among its key personnel, but beginning in August many of Wolfe's hand-picked officers went back to the States, presumably to be fed into new B-29 units, and their replacements took over. Saunders stayed on at Kharagpur for several weeks after LeMay's arrival, though the elimination of the 58th Wing rendered him surplus. On 18 September Saunders was seriously injured in the crash of a B-25 during an administrative flight and was evacuated to the United States only after a slow recovery.[153] Meanwhile, Hansell had left the Washington headquarters to take XXI Bomber Command out to Saipan and Brig. Gen. Lauris Norstad had succeeded him as chief of staff of the Twentieth Air Force. In spite of the numerous changes in organization which have been recorded above, there were throughout only minor fluctuations in the command's total authorized and assigned strength, as the following figures show:[154]

	30 June 1944		*31 October 1944*	
	O	EM	O	EM
Authorized strength	2,214	12,798	2,193	12,940
Assigned strength	2,212	12,865	2,250	13,237

When LeMay informed Washington on 2 November that the reorganization of XX Bomber Command was "now practically complete," he reported 75 officers and 484 men surplus and eligible for reassignment,[155] but he was then negotiating for the exchange of surplus B-29 crews for a bulk allotment of about 900 men for air transport duty which would further modify the strength of his command.

The reorganization of XX Bomber Command, like its every other

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activity, had been complicated by the necessity of operating a transport service to support strikes out of China. The original MATTERHORN logistics plan had failed, in part, as Wolfe insisted, because diversion of the 73d Wing to Saipan had left him with too few B-29's for self-support.[156] Operations had been made possible only by the assignment to XX Bomber Command of three air transport squadrons (mobile) equipped with C-46's. At the end of July, the situation was something like this: the command had turned over to the 312th Fighter Wing a monthly allocation of 1,500 tons, guaranteed by ATC in exchange for 18 C-87's, and was quit of further responsibility to the wing; the command was operating both tactical and tanker B-29's in transport flights direct from Kalaikunda to Chengtu; and it was operating 3 C-46 squadrons over the regular Hump route via Assam and Chengtu.* By these means the bomber command had hauled in July 2,978 tons, enough to support only 135 combat sorties according to current estimates of 22 tons per sortie. Deliveries could be stepped up as the command learned more about the transport business, but only by moderate degrees, and certainly not enough to allow the 225 sorties per month which the Twentieth Air Force had set as its minimum goal. In spite of the heavy investments already expended in the CBI, Arnold was considering the possibility of moving the B-29's to another theater if the weight of attack could not be increased.[157]

Unable to find supplies for its regular monthly quota of missions, XX Bomber Command was committed also to a short-term campaign of air support for certain Pacific operations to be conducted by MacArthur and Nimitz in the autumn.† Stilwell, informed early in May of the support desired from the bomber command and the Fourteenth Air Force, had insisted he could build up the requisite stockpile in China only by increasing the lift potential of ATC's India-China Division (ICD).‡[158] The emergency created by the Japanese push in east China accentuated the need for more Hump tonnage and the build-up of ICD became a matter of urgency. If accompanied by a firm guarantee of tonnage for regular missions and PAC-AID, as the support for the Pacific operations was coded, it would have solved the command's supply problem.

* See above, pp. 77, 86, 89.
† See below, pp. 275–88.
‡ On 1 August 1944 ATC's India-China Wing became the India-China Division.

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Neither Wolfe nor Saunders enjoyed the task of running a separate air transport line, and their control of the C-46 squadrons, originally a temporary expedient, inefficient, and in flat contradiction to the basic concept of ATC, had resulted from a conflict in principles of command. Stilwell, as theater commander, had the responsibility for allocating Hump tonnage, and the Joint Chiefs were reluctant to interfere by stipulating a flat guarantee for MATTERHORN. But Arnold, as commander of the Twentieth Air Force, feared that without a firm commitment XX Bomber Command would be squeezed by the more immediate tactical needs of the Fourteenth. In this dilemma, Arnold explored the two obvious possibilities, build-up of ICD with a firm monthly quota for MATTERHORN and the assignment of more transport planes to XX Bomber Command. It was only in November that a solution was reached.

The alternatives had been clearly delineated by Wolfe just before his recall to the States. Admonished sharply to improve his transport operations to allow for at least two maximum missions a month, Wolfe on 29 June listed three possible means of achieving his directive: by building the command's strength to 180 B-29's, 128 for combat, 52 for tankers; or by assigning 150 B-29's plus 80 B-17 or B-24 tankers; or by having the JCS secure a firm allocation of 2,000 tons monthly from ATC.[159] Under any plan, XX Bomber Command would retain its C-46's. Back in Washington, Wolfe went over these proposals with LeMay and Arnold's staff.[160] The 180 B-29's were already provided on paper in the imminent reorganization of the 58th Wing. On 7 July Arnold proposed to the JCS an increase of the Hump lift to 31,000 tons in December by adding to ICD's resources;[161] a week later he made the correlative recommendation that the Joint Chiefs guarantee to the bomber command enough of the increased tonnage to insure the designated 225 sorties per month.[162] With the command's own efforts, this amount was variously calculated at from 2,000 to 2,500 tons, exclusive of the needs of the 312th Fighter Wing.[163] Both suggestions were referred to appropriate agencies for study, which meant no immediate action, but the matter of the B-17 or B-24 tankers could be handled within the AAF.

Saunders was informed of the proposals under consideration by the JCS and of the possibility that he might receive eighty B-17 tankers; Arnold wanted to know if he could furnish flight crews and maintenance for them.[164] As to maintenance personnel, the command was

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already shorthanded and eighty more transports would impose a heavy additional strain. Of flight personnel, however, there was no shortage. Original T/O's had called for 2 combat crews per UE B-29, or 224 for the wing, but actually the 58th had come out with 240. Wolfe, and later Saunders, had complained of this plethora which made it impossible for all crews to get enough flying time to maintain efficiency and morale. Saunders wished to reduce the assignment to 1⅓ or 1½ crews per plane (160 or 180 for the wing under the new T/O) and send home the surplus crews.[165] Arnold proposed to use excess crews to operate the additional tankers, which Saunders considered a waste of highly trained B-29 crews. He would have preferred to assign the tankers to ATC in return for a flat guarantee of perhaps 2,700 tons per month.[166]

General Giles went to the CBI in mid-July and there, at Arnold's request, he held a conference of interested commanders to arrive at some agreement on the allocation of Hump tonnage for current needs and for PAC-AID. Calculating the total Hump lift with the expected augmentation of facilities at 21,320 tons, Giles on 2 August proposed that the JCS might allocate that sum as follows: to the Fourteenth Air Force, 10,000 tons; to other CBI agencies, 3,200; to XX Bomber Command, 6,300 *firm* including 1,550 tons for the 312th Wing; for PAC-AID stockpiling, 1,820. Of its 4,750 tons net, the bomber command would haul 1,600 tons in B-29's and in 40 C-46's; the other C-46's (1 squadron of 20 planes) and the promised heavy bomber tankers would be operated by ATC.[167] This plan was essentially what Saunders had earlier suggested but was not wholly acceptable to Arnold, who expected XX Bomber Command to operate the tankers (now designated as seventy C-109's, B-24's converted as tankers) and who repeated a sentiment recently expressed, that he would not tolerate the continued use of B-29's as transports after the arrival of the C-109's.[168]

Giles' message seemed to indicate some willingness on Stilwell's part to receive "additional guidance" from the JCS in regard to tonnage allocation. When asked by Marshall on 10 August, Stilwell thought it possible to maintain 6,300 tons for XX Bomber Command if ATC were expanded according to schedule; rather than a directive to that effect, however, he preferred that the JCS give him a statement of the relative importance of the several activities dependent upon the Hump lift.[169] On 25 August the Joint Chiefs approved the increase in ICD's potential as proposed by Arnold and provided a statement to guide

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the allocation of tonnage.[170] This went to Stilwell next day in a radiogram which suggested the following order of priorities: 1) maintaining the air link to China to insure operations and defense of bases needed for PAC-AID (supply of Fourteenth Air Force and stockpiling for PAC-AID); 2) implementing MATTERHORN at the rate of 225 sorties a month; and 3) requirements of Chinese air and ground forces.[171]

According to Arnold's office, the intent of the JCS had been to insure for XX Bomber Command support for 225 sorties per month.[172] The command, however, put little reliance in a directive that gave so low a priority to MATTERHORN strategic missions. When LeMay assumed command on 29 August, it seemed obvious that he would have to increase, not abandon, transport activities; there was no longer any thought of assigning the C-109's to ATC, but rather of getting them to Kalaikunda and at work as soon as possible.[173] A plan for operating the C-109's had been approved on 25 August. A small cadre of administrative and maintenance personnel plus 244 enlisted trainees would be assigned to the "C-109 provisional unit" at Kalaikunda. The B-29 crews, less one bombardier-navigator and one radar operator each, to a total of seventy-two would be rotated on sixty-day TDY. To each C-109 would be assigned a flight crew of five and a ground crew of eight, drawn from the cadre mechanic trainees and surplus members of the B-29 crews.[174] The provisional unit became a reality early in September when B-29 crews, ground personnel, and the first C-109's arrived at Kalaikunda. Later, with the reorganization of the command, some 39 officers and 460 men were authorized for "cargo service units."[175]

These arrangements did not bring immediate relief to the pressing need for more tonnage at Chengtu. Exclusive of requirements for fighter defense, the command needed some 4,950 tons for 225 missions, plus about 500 for overhead. According to their own figures,* XX Bomber Command in August had received at Chengtu 1,478 tons from ATC and had hauled 798 tons in C-46's, 1,106 in B-29 tankers. At Arnold's repeated insistance, the tactical B-29's had been withdrawn from the wearing transport job, so that the over-all total was only 3,382 tons, nearly 600 short of the July haul. In September, with an early promise of 3,200 tons from ATC,[176] the command received 2,141; with the tactical B-29's back on the job and some help from

* See above, pp. 83 *n*–84 *n*.

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such C-109's as arrived during the month, a total of 4,581 tons was brought in to the forward bases. Deliveries for October and November, when PAC-AID missions would be run, must be much heavier, but for those missions XX Bomber Command could draw upon Stilwell's stockpile. LeMay's estimate of 10,685 tons for October was almost exactly met with a total delivery of 10,830, of which 7,301 were by ATC planes.[177] The C-109's were slow in arriving—only thirty-three had been received by 5 October when deployment should have been almost completed—and in spite of valiant efforts at Kalaikunda it was still acknowledged by the bomber command that both C-109's and C-46's could be operated more efficiently by ICD.[178]

By mid-October, Arnold's staff had come around to that point of view, concurring in a "feeler" sent out to Sultan by ATC at Washington to the effect that ICD take over on detached service one of the XX Bomber Command's C-46 squadrons and twenty to thirty of the C-109's. "We all agree," LeMay was informed on the 17th, "that it would be desirable to get you out of the transport business but the main requirement is . . . the insurance of ample tonnage."[179] Such an arrangement did not have to involve even temporary transfer of B-29 crews to ATC control, since the Twentieth Air Force had already proposed to cut down authorization of such crews from 2 to 1.3 per UE aircraft and to exchange for those rendered surplus a bulk allotment of 924 flight and maintenance personnel.[180]

Conferences in the CBI indicated that Stilwell was not averse to such an arrangement and that he would give a reasonably firm guarantee if the exchange were made.[181] At LeMay's suggestion, the details of the trade were modified to include all of the C-109's and two squadrons of C-46's, leaving him one squadron for hauling dry cargo. Permission to make the described reassignment was granted by the end of October, and the new arrangement was reflected in the transport records of November and December.[182] B-29 tactical planes were taken off the Hump run in November, B-29 tankers in the following month, and deliveries were predominantly by courtesy of ICD. There would still be disagreement over each monthly allocation, but XX Bomber Command had been relieved of a task which had long absorbed much of its energies. The theory of the self-supporting bomber unit had been broken by the harsh realities of China-Burma-India.

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CHAPTER 5

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EXIT MATTERHORN

XX BOMBER COMMAND flew its ninth mission, an attack against Anshan's coke ovens, on 26 September 1944, its tenth, a strike against Okayama on Formosa, on 14 October. The interim, a decisive period in the reorganization of the command, marked also a turning point in its operational story. With an increase in supplies available at the forward bases LeMay quickened the tempo of the attack: never again would there be so long a rest for the B-29's as this eighteen-day pause, and subsequent missions would be on average of greater weight and greater effectiveness. For these new efforts new objectives were chosen, involving a radical shift in the strategic target system and a closer integration with the operations of other commands.

As preparations advanced for a sustained bomber offensive against Honshu by Marianas-based B-29's, the strategic importance of the Chengtu fields waned—indeed, by September Arnold was considering seriously what had always been implicit in the MATTERHORN concept, transfer of XX Bomber Command to a more profitable site. The move was to come by stages. Because of the desperate tactical situation in China, the command pulled out of its Chengtu fields during the last week of January 1945, but it continued to fly missions from India until 30 March. Soon thereafter the combat groups and their supporting units moved to the Marianas, and XX Bomber Command, a headquarters with grandiose prospects but no bombers, moved out to Okinawa only to be dissolved and absorbed by the Eighth Air Force in July.

During its last six months of combat in the CBI the command expended a far greater share of its effort than had been anticipated against tactical objectives in China and southeast Asia. Strikes in sup-

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port of MacArthur's campaign in the Philippines; attacks against shipping, docks, rail communications, and ammunition dumps on behalf of Mountbatten; aerial mining and VLR reconnaissance—these activities lent variety to the command's program and overshadowed its original strategic mission, represented during this period chiefly by seven attacks against aircraft industry targets. The shift in priority from coke ovens to aircraft factories did not constitute a radical revision in plans, having long been considered a possibility, but the abandonment of the Chengtu fields did. That move, in fact, marked the end of the MATTERHORN strategic concept, and although it came just as XX Bomber Command was reaching its peak of performance, operations thereafter bore an air of anticlimax as the command awaited with such patience as could be mustered the expected move into a more decisive theater.

Thus the history of XX Bomber Command after September 1944 divides itself naturally into three phases, that of China-based missions, of India-based missions, and of withdrawal to the Pacific. There is some overlapping, for missions were staged from the Kharagpur area during the first as well as second phase, but at the risk of confusing the chronology of the forty missions flown between October and April, this is the pattern which will be followed in the present chapter.

Missions from China

In October 1944 and January 1945 XX Bomber Command flew a number of missions in direct support of operations in the Pacific. This effort, referred to tersely as PAC-AID, had been under consideration since before the initial strike against Bangkok, but plans had remained fluid as Pacific strategy developed. The objectives eventually chosen for PAC-AID tied in closely with the command's newly designated target system, the Japanese aircraft industry, and it is convenient here to explain that choice of targets.

During the summer, opinion at Twentieth Air Force Headquarters had veered from coke toward the aircraft industry as the top-priority objective, and by early September staff planners had about decided to modify the bomber command's target directive. Arnold, then preparing for the OCTAGON conference at Quebec, would make no immediate decision, but on the 8th directed the Committee of Operations Analysts to revise its report of 11 November 1943 on economic

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targets in the Far East, now completely outmoded by the accelerated pace of the war and the early prospect of XXI Bomber Command operations from the Marianas. In spite of Arnold's impatience, such a revision could not be produced overnight, but in the meanwhile his staff informed LeMay of a possible shift in objectives which would give top priority to aircraft plants at Omura, Mukden, Watanabe (near Fukuoka), and Okayama. These were not the most important Japanese airplane plants, but they were the best within range of B-29's at Chengtu. This message was dispatched on 13 September,[1] and within a few days Okayama was scheduled as target for the command's next mission.[2]

The COA report was finished on 10 October.[3] At Arnold's request it consisted of two parts based on alternative assumptions: that Japan might be defeated by sea- and air-blockade alone, or by those means plus an invasion of the home islands. The two lists of target objectives differed in order and emphasis rather than in substance. On the first premise the COA recommended 1) a general campaign against shipping, including extensive VLR mining operations, 2) an attack on the aircraft industry, and 3) saturation bombing of six specified urban industrial areas. Mining and precision bombing of aircraft factories could be done simultaneously, but the area attacks were to be postponed until they could be made in heavy force. Thereafter a fresh study should be made to determine whether other suitable targets existed. If plans should contemplate the invasion of Japan, the B-29's ought to engage "generally" in attacks on the aircraft industry and urban industrial areas, and to intensify the antishipping campaign. Detailed studies of the offensive against the aircraft industry and the six city areas had already been prepared and that on VLR mining was shaping up; all these were to be used as guides.[4]

The main concern of the COA was properly with B-29's based in the Marianas and in other Pacific islands to be captured later. VHB forces in those areas would dwarf the one wing in the CBI, and with the prospect of mining Shimonoseki Strait, it was thought that no strategic targets of great importance would exist within range of Chengtu. The COA report of 11 November 1943 had been concerned with an expanding Japanese industry which might be slowly crippled by attacks on steel (via coke ovens) and on shipping. This theory had lent importance to Chengtu, within B-29 range of most of Japan's coking plants in Kyushu, Manchuria, and Korea. Since that report, however,

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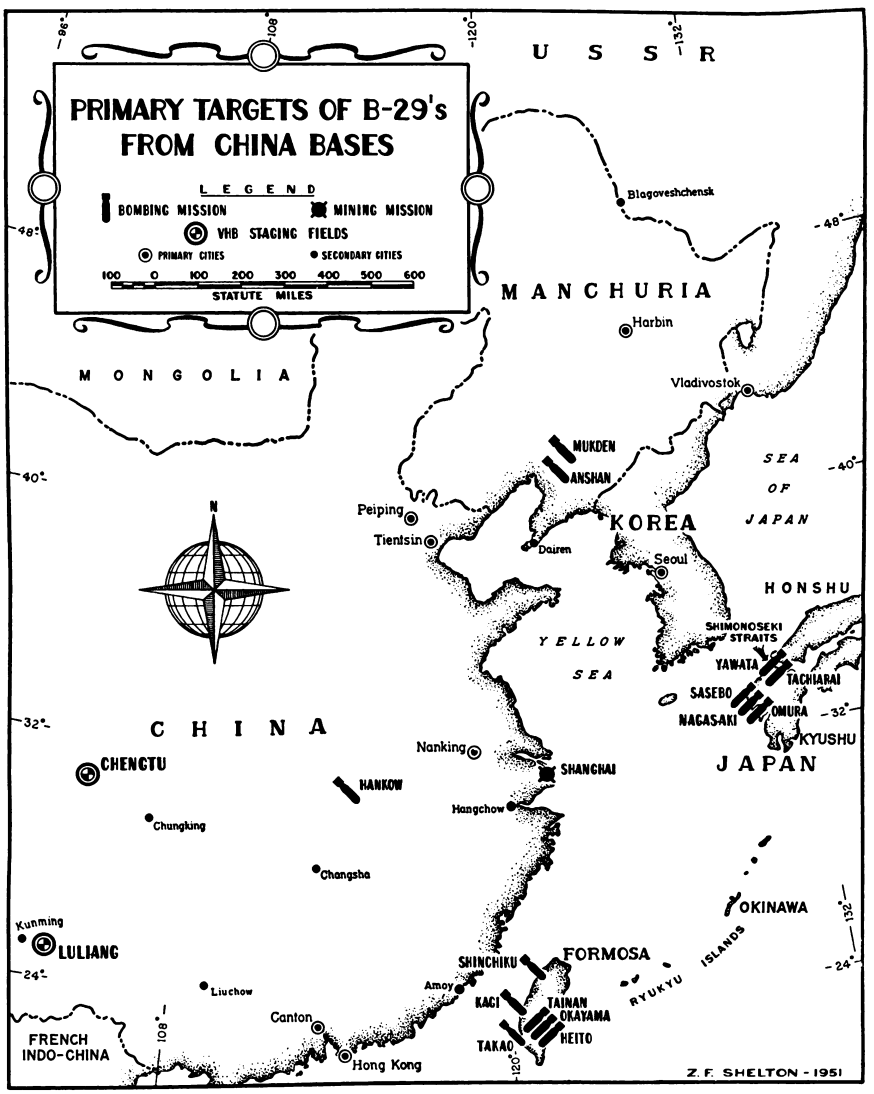
shipping losses had curtailed Japanese industrial expansion; the inability to move iron ore from the Philippines, Hainan, and the Asiatic mainland to processing plants in Japan was now thought to be the true



limiting factor. Since there was apparently a surplus of coke in Japan and merely a balance (as against an earlier surplus wiped out by XX Bomber Command) on the continent, Anshan, Penchihu, and a shale-oil plant at Fushun remained profitable targets only if XX Bomber

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Command remained at Chengtu and if it were not fully employed against tactical targets. The only tactical target named, however, was Okayama in Formosa, an aircraft repair and modification center near Takao and the principal staging center for Japanese planes en route to the South or Central Pacific.[5] The implied possibility of leaving Chengtu and of turning to tactical bombardment was prophetic; so was the choice of Okayama as the only aircraft target, for Halsey's carriers were scheduled to hit Formosa on 12 October—just two days after the COA report was submitted—and XX Bomber Command would attack Okayama as its first job in PAC-AID.*

PAC-AID had been long in the making, its details changing with each revision of strategic plans for the Pacific. Those plans are described more appropriately in a later chapter;† here it suffices to point out the strategic significance of the Luzon-Formosa-China coast area. Control of all or parts of that triangle was recognized in Washington and the Pacific theaters as a prerequisite for the final assault on the home islands, but there were long debates over rival plans advanced by Nimitz and MacArthur for achieving that control. On 12 March 1944 the JCS had decided that there should be not one but two axes of approach: Nimitz and his POA forces moving via the Marianas-Carolines-Palaus, MacArthur advancing from New Guinea to Mindanao, prepared to take Luzon if necessary. Target dates were: Mindanao, 15 November; Formosa, 15 February 1945, or, should the Luzon operation prove necessary before Formosa, Luzon should be invaded on the latter date.[6]

In any event it was a Pacific plan and one which relegated the CBI to a secondary role. The Joint Strategic Survey Committee (JSSC) stated the case bluntly: "Having decided on our strategy in the Pacific and accepted it as the basic and primary strategy against Japan, our Asiatic strategy should be planned primarily on the basis of how it can most promptly and effectively be integrated with Pacific strategy."[7] The approach to the Philippines and Formosa could be aided by China-based planes, Chennault's working out of east China fields and the B-29's from Chengtu. This was the logic which underlay the JCS message of 2 May directing Stilwell to commit XX Bomber Command to support of the Mindanao operation in November, the Formosa assault in February.[8]

The Joint Chiefs suggested that Stilwell begin stockpiling for PAC-

* For map of Formosa, see below, p. 472.
† See below, pp. 275–88.

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AID at once. This he could hardly do with his airlift to China more than strained by Chennault's needs in the face of the Japanese offensive and with the XX Bomber Command levy against ATC;[9] PAC-AID thus was a potent factor in the July decision to augment ATC's Hump potential.* The directive of 2 May specified that XX Bomber Command support of Pacific campaigns should not prejudice MATTERHORN operations, but the guide submitted by the JCS to Stilwell on 26 August to govern allocation of Hump tonnage accorded a higher priority to PAC-AID than to strategic operations.[10] With Pacific strategy firming but slowly, XX Bomber Command learned little during the summer, and as late as 4 September Washington had to report PAC-AID plans still tentative.[11] Within a fortnight, however, they began to jell, but in unexpected form.

When the OCTAGON conference opened at Quebec on 8 September, the schedule for Pacific operation stood thus: Morotai (SWPA) and the Palaus (POA), 15 September; Yap and Ulithi (POA), 5 October; Talauds (SWPA), 15 October; Mindanao (SWPA), 15 November; Leyte (SWPA), 20 December; Formosa-Amoy, 1 March 1945, or Luzon, 20 February.[12] In preparation for the first of these invasions, Halsey in early September sent Mitscher's fast carriers in a series of strikes in the western Carolines and Philippines. In attacks on Mindanao, Task Force 38 met little opposition; according to Halsey, Mitscher found that "the Fifth Air Force had already flattened the enemy's installations and that only a feeble few planes rose to meet him." Halsey accordingly ordered a three-day strike against the central Philippines beginning 12 September.[13] On Leyte enemy air opposition again proved weak, so weak that on the 13th Halsey suggested to Nimitz that the timetable be set forward—specifically that the Talauds, Yap, and the Palaus be bypassed and with forces thus made available MacArthur should go on directly to Leyte, skipping Mindanao. It was too late to cancel the Palaus, but Nimitz indorsed the rest of the recommendation and sent it on to Admiral King, then sitting with the CCS at Quebec.[14] With remarkable dispatch the Joint Chiefs got the concurrence of MacArthur's GHQ and on 15 September set up the Leyte operation for 20 October.[15]

This decision advanced D-day for the initial PAC-AID mission by some four weeks and thus complicated the already difficult problem of supplies in the forward area. Earlier plans were scrapped, and in a

* See above, pp. 126–30.

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new estimate LeMay figured his October potential at 225 MATTERHORN and 125 PAC-AID sorties, an effort he could increase by monthly increments of 25 sorties till he reached a maximum of 425 in January—provided he had fuel in China. Advised of this by a new directive of 29 September, Stilwell guaranteed tonnage to support the 350 October sorties.[16]

On 22 September the JCS submitted to the several theater commanders concerned an outline plan for the bomber command's effort in support of the Leyte show, two closely spaced maximum missions (170 sorties in all) against Okayama, plus VLR reconnaissance* on request from Pacific commanders.[17] Though MacArthur suggested hitting airfields on Luzon, and Chennault, deploring the "incongruity of the present situation," offered an alternative plan,[18] Nimitz found the JCS plan acceptable and it held.[19] The B-29 missions were to be coordinated with strikes by Mitscher's fast carriers, scheduled to attack Okinawa on 10 October and Formosa on the 12th and 13th. The combination of carrier and VHB attacks on air installations was designed to minimize air reinforcement of the Philippines as MacArthur closed on Leyte. At CINCPOA's request, Mitscher was to go it alone on the two days of his sweep; Arnold ordered the B-29's to attack on the 11th and 14th, but when 10 October weather forecasts were pessimistic, these strike dates were postponed to the 14th and 16th.[20] The Twentieth Air Force reserved the right to direct PAC-AID operations as it did strategic missions, leaving local coordination to theater commanders; this required a vast amount of radio traffic but the complex operation went off without a serious slip.[21]

On 10 October Task Force 38 struck along a 300-mile arc centering on the Ryukyus, feinted with a fighter sweep over Luzon on the 11th, then turned on Formosa. The wide-ranging 2-day attack on the island failed to surprise the Japanese, who reacted vigorously, but it was highly successful: Halsey's later claims ran to the staggering total of 520 enemy planes destroyed, 37 ships sunk, and 74 probably sunk.[22] This might seem to have left poor gleaning for LeMay but his targets had not been spoiled. Mitscher's planes had damaged Okayama, but not critically. The aircraft repair and assembly plant, with its adjacent air base, needed a more thorough working over to deny its use as a staging field to the Philippines.[23]

The B-29's began moving up to Chengtu on 9 October, and 5

* VLR reconnaissance operations are discussed below, pp. 163–65.

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days later 130 of them got off without incident, though carrying an average of 6.8 tons each of 500-pound GP's and incendiaries. During the noon hour 104 bombers dropped about 650 tons on Okayama. Weather was good and so was the bombing, though late arrivals were hampered by smoke. Task Force 38 had destroyed or cowed the island's defenders: the few fighters sighted offered no resistance and flak was meager.[24] Five B-29's bombed Swatow, two the Japanese-held airfield at Hengyang (named last resort target at Chennault's request) and six bombed targets of opportunity. A dozen planes made emergency landings at friendly fields in China, one crashed near Changteh whence its crew walked out, and one was listed as missing. This was a cheap price to pay for very severe damage done to Okayama installations.[25]

Indeed, that damage appeared so heavy that LeMay considered it unnecessary to send back all of the available planes for the mop-up on the 16th. Halsey, with a couple of wounded cruisers for bait, was trying to lure the Japs into a fleet action and Formosa needed policing, but at Washington's suggestion, LeMay divided his forces: the 444th and 462d Groups were to return to Okayama on 16 October while the 468th hit Heito, an air base and staging field located just east of Takao, where there was an air arsenal that performed repair and final assembly of fighters. Next day the 40th Group was to bomb Einansho Air Depot near Tainan.[26] The twin mission went off less smoothly than that of the 14th. Of forty-nine planes airborne against Okayama, only twenty-eight bombed there, but they were aided by five stragglers from the 468th Group. To even things up, a formation of eleven planes from the 444th flew calmly by its Okayama target and struck at Heito through an error by the lead bombardier. Other B-29's bombed alternate or chance targets at Takao, Toshien, Swatow, and Sintien harbors; at Hengyang; and at several airdromes, including Taichu on Formosa.[27]

Damage assessment at Okayama made on the basis of photo reconnaissance confirmed enthusiastic reports by aircrews. Lead aircraft on 14 October had made photos revealing Navy damage which included four buildings destroyed and nine damaged out of eighty at the assembly plant, and five hangars destroyed at the air base. XX Bomber Command had added vastly to the havoc, especially on the first mission. After 16 October only six small buildings at the assembly plant remained intact; nine had been damaged, sixty-five destroyed. At the

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air base the B-29's had destroyed two hangars and sixteen buildings (out of thirty-two) and damaged nine. A total of 116 aircraft had been hit in the 2 areas by Navy and XX Bomber Command planes. Damage assessment at Heito and Einansho was less specific for want of good photos and was less spectacular. Elsewhere a number of other targets had been hit accurately but with little weight.[28]

But the important target had been the plant at Okayama, and LeMay's intelligence officers estimated that it would require from four to six months' work to be restored to full operations. Their estimate proved an accurate one: after the war the Japanese Historical Group's description of the raids and their assessment of damage tallied generally with the intelligence reports (save that the Japanese patriotically but erroneously claimed that three B-29's were shot down on the 17th). Little damage was done, they said, on the 16th and 17th, but at Okayama the

> majority of the buildings of the 61 Air Depot were destroyed and burned and the air depot was rendered useless with little hope of rebuilding. Most of the buildings of the Tainan and Takao Air Bases were burned. This was the first case of major damages suffered by land installations in Japan proper as a result of B-29 attacks.[29]

As to the effects of the strikes on the Leyte operations, the Japanese historians were less reassuring. "Intercepting land-based aircraft," they said, were deployed in Kyushu, Okinawa, and northern Formosa, and hence the Okayama attacks "had no direct effect on the defense of the Philippines." But because the Okayama air depot performed maintenance for aircraft used for training, its destruction caused "a considerable hindrance . . . to training of airmen." And so, ironically, PAC-AID brought little aid to Pacific forces but accomplished a minor strategic job with admirable thoroughness. The same could not be said about all subsequent strategic missions.

On 11 October Washington had informed LeMay definitively of the long-expected change in target systems which gave first priority to the aircraft industry.[30] Primary target within range of Chengtu was the Omura Aircraft Factory, which manufactured Petes, Zekes, and a new carrier attack plane called Grace, and repaired Zekes and Jakes. Omura, on Kyushu, had been hit by a single B-29 on the night of 7/8 July and had been suggested as a possible target in August. Now it was to absorb a major share of XX Bomber Command's efforts in five missions run before the withdrawal from China.

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LeMay's attacks on Formosa, involving 302 sorties, had strained his resources; his best plan, accepted by Washington, envisaged a maximum strike about 25 October (which would make his monthly total exceed the 350 sorties Stilwell had promised to sponsor) and 2 closely spaced attacks after 10 November—all against Omura.[31] He got 103 B-29's north to Chengtu but only 78 managed to get up on a predawn take-off on 25 October. Over Omura, 59 planes dropped 156 tons of GP's and incendiaries while 11 more were hitting various other targets. Enemy opposition was rated as moderate, but one B-29 was crippled and crashed after most of its crew had jumped safely into China. One plane, with crew, was listed as an operational loss. Strike photos and later reconnaissance on 6 November indicated a considerable amount of damage, particularly in the area devoted to aluminum fabrication.[32]

Out of India XX Bomber Command ran two strikes, a "training" mission against Rangoon on 3 November and a spectacular attack at Singapore on the 5th,* and then turned back on Omura. His Hump allotment cut 500 tons after the expensive month of October, LeMay had to readjust his November schedule to a 120-sortie strike on 12 November and 110 sorties about the 27th.[33]

The first of these missions was moved up a day on the basis of weather forecasts, and early on the 11th ninety-six B-29's were airborne for Omura. Last-minute reports indicated cloud and turbulence at Omura (aftermath of a typhoon and harbinger of Kyushu's winter) and aircraft already en route were ordered to hit the last resort target at Nanking. Fewer than half of them heard the order. High wind and cloud played havoc with formations and fifteen planes bombed individually various targets of opportunity. At Nanking twenty-four B-29's were able to bomb visually, but the twenty-nine aircraft that went on to Omura encountered weather too heavy to sight the target and so rough that radar bombing was difficult. Enemy opposition was weak, but the weather so increased the normal hazards of flying that five B-29's were listed as lost or missing from operational causes.[34] Very good photos shot on 17 November showed no new damage in the aircraft factory at Omura, though some neighboring buildings had been hit. At the factory debris from the 25 October raid was being cleared but no major repair work had been begun. At Nanking damage was noted but none of great military significance.[35]

* See below, pp. 154–56.

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The second November strike at Omura proved equally costly and futile. Scheduled for 27 November, D-day was advanced to the 24th when the logistical situation momentarily improved. General Arnold had wanted to coordinate the mission with a double-barreled blast at Honshu—a carrier sweep (HOTFOOT) and his favorite project, XXI Bomber Command's first strike at Tokyo (SAN ANTONIO I). After successive delays in the Pacific this plan failed to come off, and with a favorable forecast for 21 November, LeMay selected that date, three days before Hansell hit Tokyo.[36]

LeMay had promised a 110-plane mission; actually 109 got off the ground in the early hours of the 21st, though 1 crashed just off the runway killing all but 1 crewman. Again foul weather caused many deviations from the prescribed course. Of the wanderers, thirteen bombed the secondary target at Shanghai with fair success, and ten dropped on various other targets. Among these were five B-29's whose bombardiers were led astray by a radar operator who mistook Omuta for Omura; it was an error in reading his scope, not the name of the target. At the primary target, Omura, sixty-one planes bombed by radar and in some confusion, with two formations badly broken in an attempt to change lead planes for the bomb run. Strike photos showed no additional damage in the factory area.[37] Flak was inaccurate, and enemy air opposition was rated "moderate to strong" at Omura where Japanese fighters proved more aggressive than usual, pressing attacks at times to within less than 100 yards of the Superforts. Two new fighters were identified by B-29 crewmen for the first time, Frank and Jack II, the latter knocking off one B-29. In all, five bombers were lost to enemy action, six including the crack-up at Chengtu; fifty-one crewmen were dead or missing. B-29 crews claimed twenty-seven destroyed, nineteen probables, and twenty-four damaged.[38] This was high for XX Bomber Command, whose scores were more modest than those announced by heavy bomber units in the ETO, perhaps because intelligence officers had learned from the bitter experiences of VIII Bomber Command the necessity for careful screening of individual claims and certainly because fewer fighters rose to meet them over Kyushu and China than over Germany.

After another training mission to Bangkok on 27 November, XX Bomber Command returned to its aircraft campaign in an attack against the Manchuria Airplane Manufacturing Company at Mukden on 7 December. This was a medium-sized plant, apparently engaged

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in the assembly of advanced trainers, which the Twentieth Air Force had made a priority target for December and January, but of less importance than Omura, Watanabe, and Tachiarai. A mission against Omura had been set for 3 December, but when the B-29's came up to Chengtu, they found the weather cold there and, according to reports, it was worse at Omura. Day after day, as aircrews and staff waited in impatient discomfort, weather reports brought further postponement. Since his Superforts were spread out at Chengtu like sitting ducks for enemy hecklers and since he got no encouragement from his weathermen, LeMay on 6 December requested permission to try Mukden; Washington's consent came only a few hours before take-off time on the 7th.[39]

Field orders had already been cut, and 108 aircraft got off on schedule and without incident. With less difficulty on the way out than in the Omura missions, ninety-one bombers reached the Mukden area to find ceiling and visibility unlimited—that is, outside the planes, for intense cold had frosted the windows to the great handicap of pilots, bombardiers, and gunners. Ten planes in one formation bombed early in the run-in, hitting a rail yard nine miles short of the target. Eighty planes attacked more accurately, scattering 262 tons of bombs in the target area to cause some damage in the factory complex and more in the adjacent arsenal. Nine planes bombed in other areas.[40] Japanese defenders again were aggressive, making in all 247 individual attacks on the Superforts. Three collisions were reported: one, unintentional, destroyed the Japanese fighter but merely bent a propeller on the B-29; another, unintentional, destroyed both planes; and in one a damaged fighter took down a Superfort in what looked like a deliberate ramming. Air-to-air bombing, a frequent Japanese tactic, scored a limited success when a phosphorus bomb hit on a B-29 wing and rode piggyback all the way home, burning but without doing serious harm.[41]

Again there was an interlude in the strategic campaign as the command ran a third training mission to Bangkok on 14 December and an incendiary attack on Hankow on the 18th. Since June, Chennault had been trying to get XX Bomber Command to hit the latter target, the greatest supply base for the Japanese armies in China. Arnold, however, had refused Chennault's request on the grounds that Hankow was within range of Fourteenth Air Force planes and that such a mission would interfere with the B-29's strategic offensive. Several times

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Hankow had been named as last resort target and twice a few B-29's had bombed there, but these were feeble efforts.[42]

In November the Japanese opened a drive from Liuchow, aimed at Kweiyang and with Kunming, terminus of the Hump airway, as a possible ultimate goal. Stilwell had given little more than formal concurrence to Chennault's pleas for B-29 support, but Lt. Gen. Albert C. Wedemeyer, who had replaced Stilwell in China on 18 October, strongly indorsed the idea of a mass attack on Hankow. The threat to Kunming, key to all American efforts in China, would certainly seem to have been one of those emergencies foreseen by the JCS in April when they gave theater commanders the right to divert B-29's from strategic to tactical uses should the occasion demand.* Wedemeyer proposed that XX Bomber Command run 100 sorties against Hankow. LeMay, with a full docket for December, hesitated to consent, and since Wedemeyer commanded only in China and the B-29's were based in the India-Burma Theater, he raised the question of Wedemeyer's authority, which Washington upheld. The mission was scheduled.[43]

After LeMay had conferred with Wedemeyer at Chungking and Chennault at Kunming, operational plans were drawn which called for a coordinated strike by XX Bomber Command and the Fourteenth Air Force, the latter to work over airfields in the Hankow vicinity an hour after the B-29's had hit the city in a daylight incendiary raid and presumably while interceptors were refueling. Target for Superforts was the extensive dock and storage area along the Yangtze River. With a northerly wind predicted, operational officers attempted to avoid the obscuring effects of smoke by an elaborate scheme of bombing in prescribed sequence from south to north with four formations, each with a separate bombing area and a different type of incendiary.

D-day, set for 15 December, was changed to the 18th. LeMay, who was withdrawing from combat B-29's with unmodified engines, initially promised only sixty sorties but later reversed his decision and mixed in some older models to get ninety-four VHB's airborne from the forward fields. Of these, eighty-four shook out their fire-bombs over Hankow. The complicated bombing plan miscarried. A few hours before take-off Chennault had requested that the planes be dispatched forty-five minutes earlier than scheduled, but through a fail-

* See above, p. 38.

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ure in communications the 40th Group did not receive the message, so that it was out of order in approaching the target. Elements in three formations released their bombs in wrong sequence and smoke billowed up to hide targets from the other planes. As a result, only thirty-three planes in the first three formations and a few individual planes later were on target; some others dropped in areas inhabited by Chinese civilians. Even so, the military damage was great. The command's intelligence officers estimated that 40 to 50 per cent of the target area had been destroyed by 38 per cent of the weight of attack.[44] General Chennault later said that the raid "destroyed Hankow as a major base."

Chennault's postwar comments, in fact, are worth quoting at greater length:

> The December 18 attack of the Superforts was the first mass fire-bomb raid they attempted. LeMay was thoroughly impressed by the results of this weapon against an Asiatic city. When he moved on to command the entire B-29 attack on Japan from the Marianas, LeMay switched from high-altitude daylight attacks with high explosives to the devastating mass fire-bomb night raids that burned the guts out of Japan. . . .[45]

If the inference here is that the Hankow raid which Chennault had inspired and helped plan was the root of later XXI Bomber Command tactics, the passage does less than justice to the "Pentagon planners" for whom Chennault entertained small respect, or to the staff of XX Bomber Command. Long before the command's first mission the AAF had conducted studies and experiments on the effects of mass incendiary attacks on the inflammable cities of Japan. A small night incendiary raid against Nagaski had been staged in August and Washington had urged more. Both there and at Kharagpur there had been sentiment in favor of stripping the B-29's and using them exclusively for low-altitude fire bombing at night, the tactic which LeMay was later to use.* In September the COA had made further extensive studies on saturation incendiary attacks on six key Japanese cities, and in November both LeMay's staff and Arnold's had drawn up operational plans for such an attack on Nagasaki. PAC-AID and the early withdrawal from China negated these plans, but, in the context of these facts, Hankow can hardly be regarded as the ultimate source of LeMay's policy and tactics in March 1945.[46]

The diversion to Mukden on 7 December left LeMay with a maxi-

* See below, chap. 20.

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mum strike at Omura still to run, but when the mission did get off, on the day after the big fire at Hankow, it was only at half-strength. Next to fuel in China, XX Bomber Command's chief logistical problem was the R-3350 engine. It had been untried when the command arrived in the CBI, and the wide range of temperatures there had aggravated the ills usually attendant upon breaking in a new airplane motor. Engine changes (and failures) had been frequent, and the task of maintaining an adequate supply of spares had taxed the resources of A-4's in Kharagpur and Washington, as the tone of urgency in the voluminous radio correspondence shows. The Bengal Air Depot did a competent job of overhaul, but since its capacity was small, the bulk of used engines had to be sent back to the States to be worked over; overhauled engines were returned to CBI with new shipments which came out by the fast freighter–air shuttle until that closed down at the end of November, and thereafter by ship or ATC.[47] Although Col. Sol Rosenblatt, Deputy A-4 for the Twentieth, had made a trip to the CBI in October and had effected some improvements in the supply system, with an increase in the number of UE B-29's and the stepped-up tempo of operations the demand for spares mounted.[48] XX Bomber Command had consumed more than the 240 engines requisitioned for October, had found its allotment of 270 for November not too generous, and was asking for 360 for future months.[49] Various modifications had been made on the R-3350 through collaboration between command engineers and Wright Field, and by November more than 100 separate changes had been made. Now on the eve of the Omura mission (as before the Hankow raid), LeMay decided to send only those Superforts equipped with fully modified engines. This was not excessive caution: on the three Formosa strikes all aborts and three operational losses had been chalked up to engine or propeller troubles.[50]

In spite of his decision, LeMay again had to use B-29's with old-model engines to round out his twelve-plane formations. The bombers had stayed in China for maintenance after the Hankow mission, but only thirty-six got off for Omura on the 19th. Seventeen bombed the primary target through heavy clouds, apparently with little success, while at Shanghai, the secondary target, thirteen B-29's scored hits on the docks, warehouses, and shipping. Light enemy opposition caused little trouble, but two planes crashed (with no casualties) from operational causes.[51]

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Plans called for a quick strike at Mukden on the next day, before the return to Bengal, but weather held the mission back another day. On 21 December forty-nine B-29's were airborne and forty reached the Mukden area. Two formations toggled their bombs prematurely in gross errors of from four to nine miles—again frosted windows made it hard to watch the lead bombardier's release. The enemy had a dense smoke screen billowing up, hiding the aircraft factory from the nineteen planes which loosed at that target by offset, or radar-point, technique. No damage was done to the target proper, though the arsenal and rail yards were slightly damaged. Enemy fighters were up in force and in earnest. Two collisions occurred, one bringing down both B-29 and Jap fighter, the other destroying the fighter alone when he failed to pull over a B-29 wing after a split-second change of intention. Another bomber was lost when hit by an air-to-air phosphorus bomb.[52]

XX Bomber Command ushered in the New Year, a trifle tardily, with a training mission to Bangkok on 3 January, then returned to China for more PAC-AID strikes. Plans for support of Pacific operations had again been reconsidered in the light of changing strategy. The long Formosa-Luzon debate had finally been resolved as first Nimitz, then King, abandoned arguments for a Formosa campaign in favor of operations in the Bonins (Iwo Jima) and Ryukyus (Okinawa), which were to be assaulted only after Luzon had been secured.* The schedule approved on 3 October was: Mindoro (5 December) and Luzon (20 December) by SWPA, Iwo (20 January) and Okinawa (1 March) by POA forces. In all assaults the Twentieth and Fourteenth Air Forces were to lend support.[53]

To arrange for the supporting operations, representatives from the interested commands met at MacArthur's Hollandia headquarters in early November in the FIVESOME conference. The final decisions, incorporated in a letter of 5 November, included provisions for strikes by the Fourteenth against Hong Kong and by XX Bomber Command against Formosa as MacArthur moved northward from Leyte; as in October, VLR reconnaissance planes were to serve at request. Some estimate of the proper allocation of supplies available in China stockpiles was made.[54] The FIVESOME agreements were accepted by the several commands concerned with some reservations, particularly by Wedemeyer, LeMay, and Arnold. The exceptions stemmed generally

* See below, pp. 390–93.

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from the critical tactical and logistical situation in China, where Wedemeyer had to move large Chinese ground forces by airlift. Wedemeyer proposed on 22 November to cut back XX Bomber Command's allocation of Hump tonnage to an amount sufficient for 276 sorties (instead of 350) in December and 375 (instead of 425) for January. The JCS upheld this revision, and LeMay, who had gone over his allotment in the October PAC-AID strikes, was forced to change his operational plans.[55]

In constant touch with Washington and the two Pacific headquarters, LeMay during November expected to give some support to the Mindoro operation and a more considerable effort to Luzon. His estimate of 28 November had hardly reached Washington when MacArthur, behind schedule both in operational phasing and airfield construction on Leyte, set back the clock for the imminent move northward: Mindoro was rescheduled for 15 December, Lingayen for 9 January.* LeMay was directed to hit Omura, already set up for a normal strategic mission, on 15 December; weather interfered and though a small force bombed Omura on the 19th, none of the 287 sorties which XX Bomber Command expended in China missions during December could really be charged to PAC-AID. Mindoro had been easy but Luzon was a major operation, and in mid-December the JCS directed Wedemeyer to allot to XX Bomber Command enough tonnage for 250 January sorties in support of the landing at Lingayen. According to the Hollandia agreement, LeMay was to send out a double strike between S minus 3 and S minus 1 directed against the Shinchiku and Taihoku aircraft installations in northern Formosa. Although accepted originally by Twentieth Air Force Headquarters, these targets on further study appeared unsuitable for B-29's, and LeMay set up his mission for 6 January with the Tachiarai Machine Works, an aircraft assembly and repair plant in Kyushu, as primary visual target and the familiar Omura factory as primary radar target.[56]

Weathermen accurately forecast cloudy weather over targets. Of forty-nine B-29's airborne from Chengtu bases, twenty-eight radar-bombed Omura, eleven bombed the secondary target at Nanking visually, and six dropped at targets of opportunity. Nine of the planes at Omura missed the target by six miles, but inconclusive evidence from strike photos seemed to indicate that one formation got on target. The cost was one B-29 shot down.[57]

* See below, pp. 394–95.

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Whatever the damage at Omura, the attack seems to have afforded little diversion in favor of MacArthur's forces. As the invasion fleet moved into Lingayen Gulf, Japanese aircraft attacked viciously, with the *kamikaze* boys taking especially heavy toll on the 6th. In the belief that they were coming down from Formosa, MacArthur again asked that the XX Bomber Command hit airfields there. Both Arnold and LeMay acceded and two strikes were scheduled in spite of earlier doubts about finding a target.[58] Weather and supplies forward presented grave difficulties; the latter could be solved in some fashion but the weathermen had no control over the clouds. LeMay had figured that his stockpiles could handle 125 sorties in early January, 50 of which had been expended on the 6th. An urgent appeal to Wedemeyer brought promise of substantial aid; Brig. Gen. William H. Tunner of ATC's India-China Division was called in, and he essayed to deliver at Chengtu by 16 January 2,700 tons of gasoline. To LeMay's gratification the emergency efforts succeeded. Stockpiles at Kunming were levied upon, and ATC and XX Bomber Command transports worked overtime to replenish fuel stores, hauling in January (a short month operationally) 6,775 and 699 tons, respectively. The total of 7,474 tons was second only to October's record of 10,830.[59]

After labeling the Shinchiku-Taihoku area (decided upon in the Hollandia agreement) as an unprofitable target, LeMay substituted Kiirun harbor for attack on S minus 1 (8 January). With renewed concern over aircraft staging through Formosa to Luzon, however, he again switched targets, naming the once-worked-over air base at Heito as primary visual, Shinchiku as secondary, and Kiirun as primary radar targets. Weather held the planes down on 8 January and forecasts for the 9th gave promise of better skies toward the south (Heito) than in the north (Kiirun, Shinchiku) end of the island, but it was any weatherman's guess. On the 9th a B-29 weather scout was sent out one hour in advance of the bombers, and on the basis of spot checks a wing commander named for the day elected to try Kiirun. Forty-six B-29's got up, 6 bombed last resort targets along the China coast, and at Kiirun 39 dropped by radar 293 tons of GP's and incendiaries with unobserved results. There was neither flak nor fighter opposition at Kiirun, to the alleged disgust of one crewman who complained that in the absence of the customary reception he was in doubt as to whether he had ever got over cloud-covered Formosa.[60]

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After the Kiirun mission such planes as were in condition returned to India via Kunming for a strike at Singapore from the Kharagpur bases.* That job completed, LeMay sent all fully modified planes back to Chengtu for a double-barreled blow at Formosa air installations. By 14 January enough fuel had been accumulated to get eighty-two bombers up. To avoid, or make the most of, blind bombing, operational planners set an elaborate pattern of targets: the primary included Shinchiku (visual or radar), Kagi and Heito (alternate visual), and Takao (alternate radar). As on the 9th a wing commander made the last-minute decision on the basis of reports from a weather scout. He chose Kagi, and fifty-four planes, finding visibility good, laid a fine concentration of GP and frag bombs in the target area. Subsequent reconnaissance showed that 20 per cent of the building area had been destroyed, 46 per cent damaged, and 16 planes on the field had been hit. Twenty-one B-29's bombed other targets, most important damage being that done to Taichu airdrome by thirteen planes.[61]

After a day's delay because of weather, the command let go with the other barrel. Again elaborate precautions were taken to insure a choice of targets for any weather, but on this day the primary visual target, Shinchiku, was clear so that the 79 planes which got over target (92 had taken off) could visually drop their mixed load of 397 tons of frags, incendiaries, and GP's. Again there was no fighter opposition (one plane was lost on take-off) and this may have been a measure of the recent pounding of Formosa airfields. As in October, XX Bomber Command's missions had been mixed in with sweeps over the island by planes from Task Force 38, which struck on 3, 9, 15, and 21 January; at Shinchiku the B-29 and carrier-based raids together destroyed or damaged an estimated 70 per cent of the building area, and hit sixteen planes on the field.[62] Though enemy planes which had apparently slipped down from Formosa† made occasional antishipping strikes between the 12th and the 18th in the Lingayen Gulf, there was nothing like the concentrated attack which MacArthur had been led to fear by his experiences on 6 January. However much the command may have felt its B-29's miscast when sent against airfields, there was some satisfaction in the realization that its bombers and reconnaissance planes had helped keep down losses off the Luzon beachheads.

* See below, p. 157.
† See below, p. 413.

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The strike against Shinchiku was the end of PAC-AID for XX Bomber Command and the last mission to be staged out of the Chengtu bases. At those fields arrangements for evacuation had been carried on a standby basis for weeks and the move now came abruptly. This scratched commitments to PAC-AID for Okinawa. It marked, too, the passing of MATTERHORN, and one might have found it difficult to round up a decent showing of mourners for the interment of that plan.

Missions from India

If there had been anything immutable in the MATTERHORN plan, it was the understanding that XX Bomber Command might be transferred from the CBI when more convenient bases were available. The early diversion of the 73d Wing to Saipan and Arnold's threats to withdraw the 58th because of its slow rate of operations during the summer of 1944 served to remind members of the command of the mobility clauses carefully included in the JCS control system. During September LeMay had raised with the Twentieth, apropos the need for resurfacing the Chengtu strips, the question of permanence in the CBI. He was assured that he could count on nine more months in the theater—in fact, he was asked in an exploratory fashion if he could use more B-29 units in India. LeMay's answer, if not unique in AAF annals, was unusual; he flatly declined the implied offer on logistical grounds, observing that his whole operating scheme was "basically unsound" and justified only by the lack of other bases. Washington agreed with this judgment and expressed hopes of moving the command, presumably at an earlier date than had been suggested before. On 12 November Chennault again asked for a decision on the Chengtu runways, which badly needed repairs before the rains set in.[63] But by that time it had begun to appear that the B-29's would never see another rainy season in China.

The November drive of the Japanese which overran Liuchow on the 11th and Nanning on the 23d threatened to curtail LeMay's December operations out of Chengtu, since Hump tonnage would have to be diverted to fly in Chinese ground forces needed to block the threat to Kunming.* The implications for XX Bomber Command of an emergency which promised to become permanent were clear in Washington, and on the assumption that he might have to withdraw from

* See below, pp. 253–56.

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China "before bases in POA are ready," LeMay was asked on 21 November to look for other staging bases, particularly at Myitkyina. After an examination of that area and others, LeMay and Sultan, commanding in India-Burma, advised against the development of Myitkyina for VHB use.[64] But the suggestion had served to alert the command.

On 4 December, after conferring with senior officers of the China Theater, Wedemeyer sent Marshall a detailed appreciation of the tactical situation, pessimistic—or realistic—in its estimate of Chinese capabilities. To improve the logistical situation for the Fourteenth Air Force and the Chinese Army, he recommended that XX Bomber Command "be removed from this area as early as possible after 15 January," that is, immediately after PAC-AID for Luzon. When enjoined by the JCS to support LeMay for 250 PAC-AID sorties in January, Wedemeyer so agreed in a message of 16 December in which he again reviewed the situation in China, now somewhat eased. In the light of Stilwell's recall and of bitter postwar debates over our policies toward the Nationalist government and its armed forces, it is interesting to note that in his messages of 4 and 16 December Wedemeyer attributed to the Generalissimo, his subordinates, and his armies pretty much the same faults that Stilwell had long decried.[65] Wedemeyer's language was more formal and less pungent than "Vinegar Joe's," but his picture of political corruption, false pride, apathy, and military ineptness differed little from that of his predecessor. The Nationalists were showing little will to resist, and the enemy's halt in December, caused by weather and extended supply lines rather than by Chinese counterattacks as Chinese sources and stateside papers claimed, was no incentive for Wedemeyer to alter his views about XX Bomber Command. Again on 12 January he addressed to Marshall and Arnold a strong plea to remove the command from China by the first week in February. This would allow him Hump tonnage to increase supplies for Chinese forces and for the Fourteenth (to be augmented by units from India);* it would also make the Chengtu fields available for B-24 use and release the 312th Fighter Wing from the inactivity of its defensive mission.[66]

Since Wedemeyer's earlier messages the JCS had been considering his request in the context of the general problem of VHB deployment, and on 15 January, at Arnold's suggestion, they concurred in his request. XX Bomber Command was to withdraw from China im-

* See below, pp. 267–69.

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mediately and was to conduct limited operations from India—bombing, mining, reconnaissance, and such tasks for Mountbatten's SEAC as were at that time performed by the 7th Bombardment Group (H), now to be transferred to China. The 312th Fighter Wing was to be temporarily assigned to the Fourteenth, subject to later recall by XX Bomber Command, which was to prepare to move into the Marianas (thus causing some readjustment in deployment schedules for the 315th and 316th Bombardment Wings) beginning before 1 April. XX Bomber Command was to retain its headquarters organization and revive the 58th Wing; in the Marianas, the XX would operate under XXI Bomber Command, but when subsequent VHB units were stationed in the Philippines or Ryukyus, XX Bomber Command would take over their control, leaving the 58th Wing in the Marianas as a part of the XXI.[67]

LeMay had been informed of the contents of Wedemeyer's messages, and there was little surprise at Kharagpur when an information copy of the JCS directive arrived on 18 January. According to the command historian, the message "didn't catch the men of XX Bomber Command with their plans down." Planning for evacuation of the China bases had begun at the group level late in November, and on 15 December the necessary field orders were written. After these were now approved with minor revisions on 20 January, the transfer to India began immediately. By the 27th the forward detachments of the four groups had pulled out, leaving only a photo-reconnaissance team whose China mission had not been completed. The rapidity of this move was a belated reminder of the mobility factor which had figured so prominently in the original MATTERHORN concept, but the more difficult transfer to Pacific bases was to be a protracted affair.[68]

Meanwhile, XX Bomber Command settled down to its "limited operations" from India, which followed the pattern prescribed in the JCS directive of 15 January. Because the command had begun in November to interfoliate India-staged missions between its China strikes, it is necessary here to backtrack.

LeMay, a driver and a perfectionist in bombardment techniques, had been satisfied with neither the slow pace of MATTERHORN operations, inexorably limited by the calculus of Hump tonnage, nor the performance of his crews on their infrequent missions. The brief schooling at Dudhkundi in September* had helped lead crews some,

* See above, pp. 116–17.

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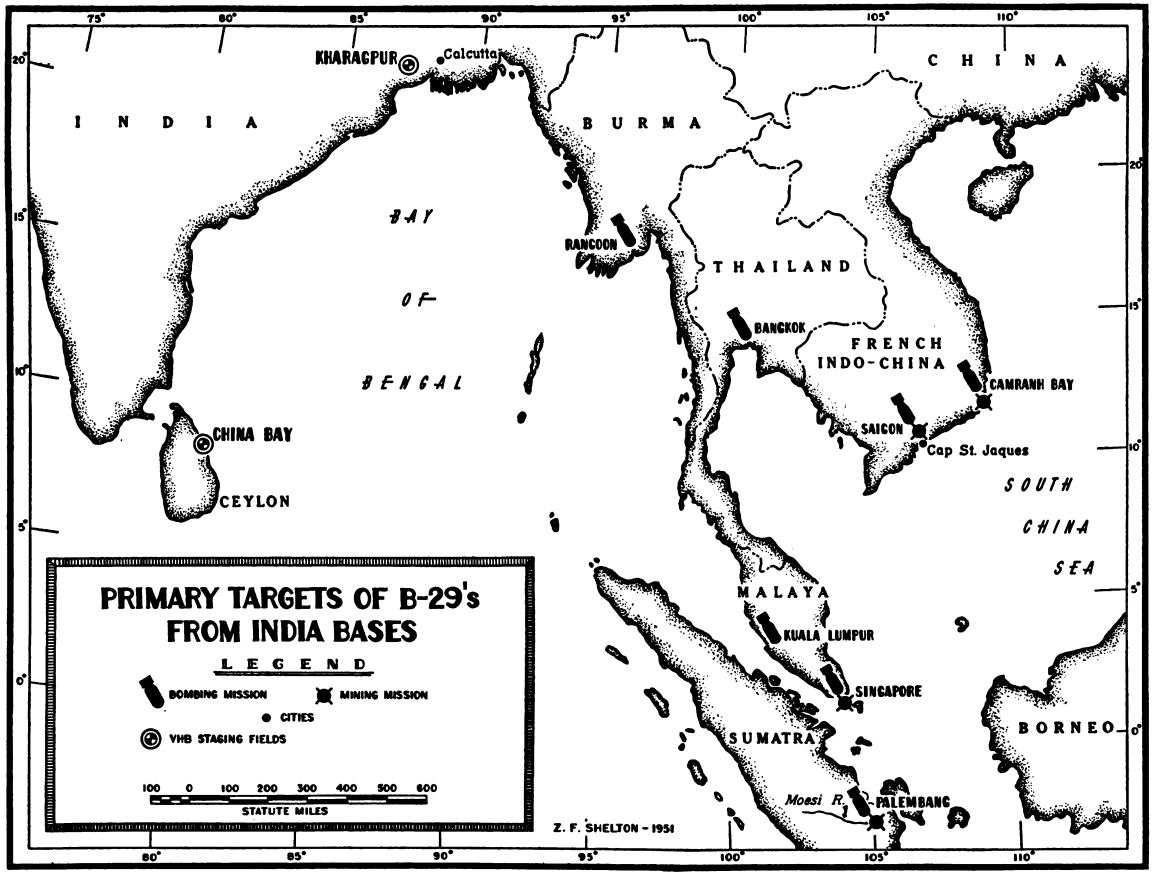

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but he wished to supplement that program with a series of combat missions in which the command would experience conditions less rigorous than those encountered over Kyushu and Manchuria and yet master LeMay's own doctrines—especially those relating to the twelve-plane formation and "synchronous" (visual-radar) bombing. At Kharagpur there was no shortage of fuel or bombs, and within moderate range there were targets where enemy defenses were not too rugged. In choosing these targets LeMay had more independence than in strategic missions, and if there were few whose intrinsic importance warranted a full-scale VHB attack, he might still agree with his intelligence section that "any target is still a target for training purposes."[69]

The first training mission had been scheduled for Moulmein for 4 October, but the Formosa attacks had interfered; by 3 November, when the strike was made, Rangoon, its Malagan railroad yards an important element in Burma's hard-hit rail system, appeared a more profitable target. Operational plans called for a coordinated attack by XX Bomber Command, EAC's Strategic Air Force, and Third Tactical Air Force.[70] Early on the 3d each VHB group put up a standard 12-plane formation, the planes carrying a maximum bomb load—the B-29's theoretical capacity of 10 tons in some cases and an over-all average of 9.6. Forty-four planes got over target in good formations, and in the short space of eleven minutes shook out their bombs, three formations visually and one by offset radar technique. Results were excellent. The roundhouse, aiming point for the bombardiers, was obliterated, other buildings were destroyed, and much damage was done to rolling stock and trackage. No combat loss was incurred though one B-29 had to ditch going out: its crew, except for the tailgunner, floated around in life rafts for thirty-six hours before being rescued by a Royal Indian Navy launch.[71]

This was in most respects an ideal training mission—even LeMay, little given to indiscriminate praise, called it the command's "first job of precision bombing"—and the next was about as good. At Stratemeyer's request, the command went out on 27 November to get the Bang Soe marshalling yards at Bangkok, where trains coming overland from French Indo-China were split up for branch lines to the Burma front, north Thailand, and Singapore. Fifty-five B-29's (their crews briefed especially to correct the ragged formations flown on recent Omura missions) got over the target to drop 382 tons of GP's

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with excellent results. Photo reconnaissance later showed they had destroyed the two aiming points (buildings at the north and the south bottlenecks), had cut every track, and had messed up rolling stock and other buildings. The cost was one B-29 wounded by an enemy fighter and lost on the way home.[72]

The command went back to Bangkok on 14 December to get the Rama VI railroad bridge, a 1,456-foot steel structure over the Chao Phraya River. This was a vital link in the Burma rail system but certainly no appropriate target for high-flying B-29's. One formation found Bangkok clouded over and went on to bomb the Central Railroad Station at Rangoon with excellent results. This formation, from the 40th Group, suffered an unusual (though not unique) accident when two instantaneously fuzed bombs collided in a salvo; four B-29's were blown up and a fifth was a total loss when it came in for an emergency landing at Cox's Bazar. The thirty-three planes that dropped at the bridge achieved a neat bomb pattern but no hits.[73] This failure confirmed earlier skepticism about bridge-busting with Superforts but it brought no relief; back the command went on 3 January for another try at Rama VI.

This second attempt was not long premeditated. On 30 December a B-29 reconnaissance plane had spotted a fat target at Cape St. Jacques in Indo-China, a Jap task force built around two battleships and a seaplane tender. LeMay had hurriedly ordered forty-nine B-29's to be loaded with eight 1,000-pound bombs each and had them on the line when the Navy signaled that the ships had pulled out. The Ywataung railroad yards near Mandalay seemed a logical second choice, but before the B-29's got off the weather over Mandalay turned sour. Rather than unload and turn northward for the PAC-AID strikes, LeMay changed the fuzing on the 1,000-pounders and sent his planes back to the Bangkok bridge on 3 January. This time luck was better: with excellent weather and almost no enemy resistance, forty-four B-29's got over the target to score a direct hit and several near misses on Rama VI and a number of hits on the abutments, putting the bridge out of service for the time being.[74]

These four attacks had served their purpose of giving practice under relatively easy combat conditions, though airmen of the 462d declared that "Rangoon is *not* a training mission" and the losses on 14 December were heavy for a milk run.[75] During the same period the command made two attacks on Singapore which by no standards

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could be called training. Actually they were in indirect support of Pacific operations though they were not designated PAC-AID, that being an artificial label that had pertinence chiefly to allocation of Hump tonnage.

At Singapore the British naval base had been taken over intact by the Japanese in February 1942 and, subsequently improved by them, it was their finest station outside the home islands. On 27 October General Arnold suggested that extensive damage done the enemy's fleet in the battles for Leyte had enhanced Singapore's importance, and he asked LeMay for an estimate of XX Bomber Command's capabilities. A VLR reconnaissance plane secured good photos on 30 October—Singapore had been virtually blacked out to Allied intelligence—but LeMay's operational officers thought little of the chances of success in a daylight mission involving a round trip of almost 4,000 miles. In spite of this lack of enthusiasm Washington ordered a strike, and on 5 November the command got seventy-six Superforts airborne.[76] Field orders were tailored to fit the extreme range: planes were loaded with a minimum of two 1,000-pound bombs, bombing heights were lowered to 20,000 feet, and elaborate jockeying into formation was dispensed with.

Primary target was the King George VI Graving Dock, largest of several dry docks at Singapore and one of the world's best. The first of 53 Superforts attacking was over target at 0644, and the bombardier, Lt. Frank McKinney, put a 1,000-pound bomb into the target within 50 feet of the aiming point, the caisson gate; Lt. Bolish McIntyre, 2 planes back, laid another alongside. This was the sort of pickle-barrel bombing the Air Corps had talked about before the war. Strike photos showed a rush of water into the dock, presumptive evidence that the gate had been strained, and subsequent reconnaissance photos indicated that the dock was out of use (A-2's estimate of three months of unserviceability was to prove quite accurate). There were other hits on the dock, on a 465-foot freighter in it, and on adjacent shops. For "baksheesh," as the boys had learned to say in India, seven B-29's bombed the secondary target, Pangkalanbrandan refinery in Sumatra, and reported direct hits on the cracking plant. The Japanese, evidently relying on the inaccessibility of Singapore, put up a feeble defense, but the long trip took a toll of two planes and twelve crewmen, including Col. Ted L. Faulkner, commander of the 468th Group.[77]

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Arnold in his message of congratulation spoke of an early return to Singapore, but it was two months before the command went back. In January, as in October, battles in the Philippines sent Japanese naval vessels scurrying, or limping, toward SEAC. VLR reconnaissance planes found a naval force at Cape St. Jacques, which moved out before the B-29's could get after them, and other warships were reported at Singapore. But in the crippled condition of the Japanese fleets, repair facilities were more important than ships and hence two Singapore docks—the Admiralty IX Floating Dock and the King's Dock—were chosen as primary targets. Forty-seven B-29's left about midnight, and the first arrival was over Singapore at 0820 on 11 January. Twenty-seven planes divided their loads between the two docks without scoring; twenty-one planes bombed elsewhere, at Penang, Mergui, and various targets of opportunity. Such was the day's luck that nine planes at Penang laid a beautiful pattern on their difficult and relatively unimportant aiming point while the docks went untouched. Again two planes were lost.[78]

These missions from India had been subordinated to strategic and PAC-AID strikes from the China bases. The abandonment of those bases changed the whole character of the VLR program. The command continued to go out against the same, and other similar, targets in SEAC, but when these became the sole rather than subsidiary objectives, the aircrews, being realistic, understood that they were no longer in the big leagues. Thus, though the rate of operations picked up rather than declined—twenty missions were flown in two months against twenty-nine in the previous seven—there was at Kharagpur an atmosphere of expectancy as the various units awaited the move to the Pacific.

That move had been foreshadowed by the transfer of LeMay who, without waiting for the withdrawal from China, had flown to the Marianas on 18 January to assume command of XXI Bomber Command. He had taken with him a handful of key personnel; in exchange, some officers came from Saipan to Kharagpur. LeMay's successor, XX Bomber Command's fourth commanding general within a year, was Brig. Gen. Roger M. Ramey, an experienced bombardment officer who had once led V Bomber Command and had more recently served as chief of staff for Hansell in XXI Bomber Command. Brig. Gen. Joseph Smith replaced Brig. Gen. John E. Upston as chief of staff at Kharagpur.[79] It would be Ramey's task to move the command

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to the Pacific, but meanwhile he would continue bombardment operations against such objectives as were available.

Industrial targets within range of Kharagpur were few, and shipping in harbors, a priority objective in the COA report of 11 November 1943, seemed the best alternative target system, especially when tied in with shipping in navigable rivers, with naval bases, and with rail installations closely linked with water traffic. The bombardment program initiated late in January involved, then, a return to such familiar places as Rangoon, Bangkok, and Singapore; it included as well new targets: Saigon, a convoy point for shipping between Japan and Singapore; Camranh Bay, a harbor used by naval and merchant vessels; Phnom Penh, river port up the Mekong from Saigon where goods brought up by water were transshipped by rail to Bangkok; Penang, Malaya's second harbor; and lesser places such as Koh Sichang anchorage below Bangkok, the Pakchan River, and Mergui and Tavoy, ports on the Burma coast.[80] These targets were attacked both in conventional bombardment missions and in mine-laying operations, but there was no tightly calculated campaign; more than one mission had the flavor of a task thought up chiefly to keep the boys busy, and only Singapore was suited, by its distance from Allied bases and its strategic importance, for B-29 attacks. And Singapore was not always "on limits" for XX Bomber Command. Consequently, a number of the strikes might have been classified, after LeMay's fashion, as training missions; there were new crews to indoctrinate and new techniques to be learned, but the training was oriented toward the type of operations expected in the Pacific, not in SEAC.

During the MATTERHORN period XX Bomber Command had conducted only one mine-laying mission, an operation coordinated with the Palembang strike on the night of 10/11 August. More recently, Eastern Air Command had mined various harbors within range of its heavies, thus throwing more of a burden on ports farther to the east and south but still within radius of B-29's at Kharagpur. This fact, plus the influx into SEAC waters of enemy warships hurt in the Philippines, persuaded Ramey to inaugurate a limited mining campaign during the full-moon phase of 23–30 January.

The first effort was a double mission on the night of 25/26 January, totaling seventy-six sorties. The 468th and 444th Groups put forty-one aircraft over Singapore to lay six mine fields among the several approaches to the harbor, while the 462d divided its force, sending

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nineteen planes to Saigon and six to Camranh Bay. These were primary targets; six more B-29's mined other waters—the Pakchan River, Penang harbor, the Koh Sichang channel, and Phanrang Bay. Drops were made, from skies clear of cloud and of enemy fighters, at altitudes ranging from 2,000 to 6,000 feet. The total load was 404 mines, armed in various fashions as local conditions suggested. Only one mine chute was known to have failed, and aircrews were pleased with the accuracy of their drops, as were Navy observers who had gone along for the ride after assisting in the technical details of the mission.[81]

During the next full moon, on 27 February, twelve B-29's returned to Singapore to mine again the Johore Strait which the Japanese had swept so industriously that they had been able to resume traffic within a fortnight. Ten B-29's sowed fifty-five mines and one lone bomber dropped at Penang. Again the job seemed well done and, as before, there were no losses.[82]

Next day, at Chennault's request, twelve B-29's moved up to China to mine the Yangtze River, a main supply route for the enemy. Using Luliang instead of Chengtu as a staging field, the bombers were weathered in until 4/5 March, when they got off with a load of six tons each. Eleven B-29's mined the two primary target areas—the confluence of the Hwangpoo and Yangtze at Shanghai and the Tai-hsing Reach, a narrows in the Yangtze between Shanghai and Nanking—and a twelfth dropped at Tungting Lake. In all areas the results were accounted excellent.[83] A moon later, on 28/29 March, ten Superforts came back to mine the Hwangpoo mouth again and also the south channel of the Yangtze at Shanghai.[84] On the same night two mining missions went southeastward, sixteen B-29's reseeding fields at Saigon and Camranh Bay and thirty-two returning to Singapore waters.[85]

No B-29 was lost on any mining expedition. Malfunctioning of mines was encouragingly negligible, and in each subsequent mission, as in the first, aircrews and Navy observers reported accurate drops. Mine loads were substantial but the campaign was too brief for decisive results: there was some hindrance to enemy shipping but it was not choked off entirely. The combat experience gained in SEAC was to prove a valuable background for the 313th Wing, trained as a specialized mining unit and destined to wreak havoc in the Inland Sea of Japan.*

During the monthly intervals between these missions the command

* See below, pp. 662–74.

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had run some thirteen conventional bombing missions. They had begun on 27 January when the 40th Group had followed up the mining attack against Saigon two nights before. Ramey had hoped the mining would cause a traffic jam in shipping, but since this failed to materialize, the twenty-two B-29's that got over Saigon radar-bombed the navy yard and arsenal. No damage was inflicted on the target.[86]

On 1 February the command sent out a maximum effort against Singapore: 112 Superfortresses, carrying at least four 1,000-pound bombs each, were airborne. Of the eighty-eight over Singapore, sixty-seven bombed the primary target, the Admiralty IX Floating Drydock at the navy yard, scoring a number of hits and near misses on the dock and on a 460-foot ship berthed in it. The ship burned and sank, and a series of later reconnaissance photos showed the dock down at one end and sinking slowly until it leveled off, apparently on the harbor's bottom. Twenty-one B-29's bombed the West Wall area of the naval base, destroying many buildings and some valuable heavy equipment, while twenty other planes deviated from the prescribed course to bomb other designated targets at Penang and Martaban.[87] Enemy fighters had got one B-29 and so crippled another that it cracked up on landing, but this was accounted a cheap price for the second highly successful attack on Singapore; the command was keyed up for return visits which might render the city useless as a port and naval base.

Plans were being made for an attack on 6 February when, on the 3d, Stratemeyer informed Ramey that Lord Mountbatten had directed that XX Bomber Command *not* attack naval installations at Singapore and Penang. This saving of valuable facilities that might later come into Allied hands may have been a sound long-term policy, but at the time it puzzled the command. Ramey asked Washington for guidance and was told to turn to other targets while the Navy investigated. Through Stratemeyer a request for clarification was also addressed to SACSEA, and Ramey flew down to Kandy to confer on possible targets. There Mountbatten gave him as first priority several targets in the Kuala Lumpur area. Second priority consisted of certain targets at Singapore, carefully zoned, however, to exclude the King George VI Graving Dock, a number of other docks, and areas including heavy machinery. The West Wall area, naval oil dumps, and commercial port facilities might be attacked if without danger to the proscribed installations. Saigon, in third priority, was similarly divided

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into restricted (naval base and port areas) and nonrestricted zones. Fourth priority consisted of certain other oil storage dumps on islands in Singapore waters.[88]

With its target selection thus straitly hedged about, the command divided its forces on 7 February in attacks on Saigon and Bangkok. The primary target at Saigon was the navy yard and arsenal, which the next day were to be added, as an afterthought, to the off-limits areas. With the command now possessing its full quota of 180 aircraft (30 UE and 15 reserve per group), the 444th and 462d Groups put up 67 B-29's. At Saigon, forty-four planes found clouds heavy enough to necessitate radar bombing; eleven planes dropped prematurely on an accidental release and thirty-three dropped in the residential section. Nineteen planes, diverted to Phnom Penh, bombed visually and did some damage to jetties and to buildings in town.[89]

The 40th and 468th Groups did better at Bangkok when they attacked the Rama VI bridge, twice visited before and still unserviceable. The command's operations analysts had made an intensive study of the bridge as a target, and as a practical compromise of the various recommendations offered, Ramey loaded the B-29's with 1,000-pound bombs fuzed at one-tenth of a second, nose and tail, and chose the center of the bridge as aiming point. Fifty-eight B-29's (out of sixty-four airborne) bombed the bridge in small formations. At least four direct hits and many damaging near misses severed two top chord members, collapsed 65 per cent of the central span, and destroyed the northeast approach. There had been much speculation as to the significance of the name of the bridge and one flyer had insisted that the VI meant it would take six attacks to cripple it. But Rama VI was definitely out on the third strike.[90]

On 11 February, at the request of EAC's Strategic Air Force, the command initiated a series of attacks on storage dumps in the Rangoon area. These were variously estimated as housing from 50 to 75 per cent of military stores in Burma, and since the successful air campaign against transportation made difficult the replenishing of stores, any considerable destruction to those dumps might have early and serious effects on front-line operations. Four groups got 56 planes over Dump F, the primary target, expending 413 tons of frags and incendiaries. Photos later showed much destruction, but it was impossible accurately to divide credit between the B-29's and the seventy-nine B-24's sent out by Strategic on the same day.[91] A month later, on 17

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March, XX Bomber Command again joined Strategic in a similar attack, going at Dump B while the B-24's hit Dump A. With future missions from Saipan to Honshu in mind, Ramey had the field orders call for a rendezvous over water (to be accomplished by the use of smoke bombs) and a high-altitude attack. Seventy B-29's got over Dump B to drop 591 tons of bombs at heights ranging from 27,000 to 30,000 feet. In spite of the altitude, the bombardiers achieved a well-concentrated bomb pattern, destroying 173 abutments—a majority of those in the dump—and damaging others.[92] The command sent two groups out on 22 March; 39 planes divided 130 tons between Dumps C and E, destroying most of the buildings in the former and some in the latter. On the same day 37 B-29's bombed the Mingaladon cantonment area near Bangkok, causing much destruction among the buildings with 114 tons of frags.[93] It was something of a come-down for the VHB's to go back repeatedly to blow up ammunition dumps or peck away at Japanese soldiers in barracks, though the crews could take some comfort in the fact that their bombing was good and that the casualty lists read, in spite of heavy concentrations of AA guns, "negative report."

In the meantime, XX Bomber Command had struck at other targets, drawn from Mountbatten's priority list. On 19 February the 444th and 468th Groups put 49 B-29's over Kuala Lumpur where, on a decision by the day's wing commander, they went as low as 11,000 feet to get below the clouds and bomb the Central Railroad Repair Shops. They damaged 67 per cent of the buildings and much trackage and rolling stock.[94] Since there was no flak and very little in the way of fighter opposition when the 468th Group went back to Kuala Lumpur on 10 March, the 26 B-29's that bombed went in as low as 8,700 feet. Again their marksmanship was good; they severely damaged the aiming point, a roundhouse, and destroyed buildings and railroad equipment.[95]

The rest of the missions in February and March were directed against Singapore. On 24 February the command, on the eve of the departure of some service units, got off its last maximum strike when 116 B-29's went out to hit the Empire Dock area, a commercial target not denied by Mountbatten's directive and ranked by operational planners as "the only suitable primary target free of stipulations left in this theater." In an all-incendiary attack, 105 B-29's dropped 231 tons (the last formations by radar because of smoke) to burn out 39

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per cent of the warehouse area.[96] One plane, with all the crew, was lost when it ran out of fuel on the way back.

In China, Chennault had requested aid from XX Bomber Command which the command had wished to limit to mining missions. In the absence of proper targets in SEAC, however, Ramey scheduled a mission for Hong Kong. This he canceled at Chennault's request (on logistical grounds) and on 2 March sent sixty-four B-29's (about all that could be supported with the service personnel on hand) back to Singapore. The target, cleared by SACSEA only on promise not to hit the King George VI Dock, comprised the shop and warehouse area in the naval base. There were many deviations from the briefed course, but 49 planes dropped 500-pound GP's in the target area adding considerably to the damage done in previous raids. Two B-29's were lost to flak.[97]

Two missions were directed at oil storage concentrations at Singapore. On 12 March each of three areas (on Bukum, Samboe, and Sebarok islands) was assigned to a B-29 group and the forty-four planes over the target dropped ninety-three tons of GP's and incendiaries with poor results.[98] In its forty-ninth and last mission, XX Bomber Command sent twenty-nine B-29's back to Bukum Island in a night attack on 29/30 March. At best, destruction of the target would cause the enemy only "some inconvenience," but it was time the boys of the 58th Wing learned something of the tactics LeMay was using against the home islands. So the planes went in low, at 5,000 to 7,000 feet, to bomb individually. Out of forty-nine tanks in the farm, they destroyed seven, damaged three, and fired several others.[99] And that was all for XX Bomber Command, though not for the four groups which were to bomb again from the Marianas.

The combat story of the command would not be complete, however, without a brief summary of photo-reconnaissance missions, to which occasional reference has been made. Here, as in bombing and mining, XX Bomber Command was the pioneer whose experience would be reflected in the activities of other VHB units. VLR photographic planes served a variety of purposes: they secured information for target folders in advance of missions and for damage assessment afterward; they mapped large areas on continental Asia and in the adjacent islands; they located defense installations and airdromes; they performed surveillance and search at sea. Nor was the weight of their efforts negligible; when bombing missions ceased at the end of March,

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the command had flown 244 photo sorties, about 7.4 per cent of the total of combat sorties, and they were to continue to work in April.[100]

In the frenzied rush to get XX Bomber Command overseas, no preparations had been made for VLR photo reconnaissance. Preliminary coverage of target areas was badly needed by intelligence officers whose visual data on Japanese industrial establishments was meager: for the first Yawata attack they had to brief crews on the basis of a 1928 ground plan, a ground photo of that year and one of 1932, and a few undated pictures. General Wolfe solicited and obtained some help from Chennault and Stratemeyer, but since many targets lay out of range of other aircraft, he modified a few B-29's as photo-reconnaissance planes. At home the AAF was working on a photo-reconnaissance model of the B-29 called the F-13, and the engineers at Wright Field were anxious to profit by the experience of those planes modified in the theater.[101]

The record of those planes was a rugged one. The first model crashed on the first Yawata mission, but another, after being turned back from Anshan on 29 July, covered the second Anshan mission, made some sorties into north China, and then the long trip to Palembang. These missions were for the command itself, but on request from Washington the converted B-29's during the summer of 1944 photographed possible airfield sites on Okinawa and again covered the island in September and October as a preliminary to Halsey's carrier strikes. In the latter month the command at MacArthur's request and Arnold's directive ran photographic missions over northern Luzon, losing two planes in the effort but flying prints out to MacArthur with the developer solution on them hardly dry.[102]

All this was accomplished by the home-made jobs. Late in November, after much delay, the F-13's began to arrive, and in December, with seven on hand, the command set up Flight C, 1st Squadron, 311th Photo Reconnaissance Wing. After shakedown missions to Penang, Bangkok, and Saigon in late December, the unit went up to Hsinching where, with a strength of 49 officers and 252 enlisted men, it received authorization for only 40 officers and 140 men and had to hold its organization together by liberal use of temporary duty assignments.[103] The flight's first directive called for daily coverage of Kyushu in anticipation of the Luzon operation; between 25 December and 5 January twenty sorties by F-13's and stripped B-29's were flown in spite of bad weather. The command sent out other sorties after the Luzon

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D-day at the request of Pacific commanders; when the forward detachments withdrew from Chengtu fields late in January, the photo-reconnaissance flight stayed on at Hsinching to complete a large assignment—mapping a great area in Manchuria, Korea, and north China.[104] XX Bomber Command had been relieved of PAC-AID commitments for the invasion of Okinawa, but after some debate was assigned photographic duties in support of that operation which were performed during March and early April. Meanwhile, in SEAC, photo planes had been even busier, performing normal duties for XX Bomber Command and in February flying thirty-five sorties at Mountbatten's request. The composite record for January, February, and March showed: from Hsinching, thirty-one, fifteen, and eighteen sorties; from Kharagpur, nineteen, sixty, and twenty-five sorties—more than twice as many as had been sent out in 1944.[105] These missions were tedious, averaging as high as fifteen hours per sortie in SEAC, and they were hazardous. But of the value of their work there could be little doubt.

XX Bomber Command: Exodus

During the ten weeks after LeMay's departure, XX Bomber Command had continued combat operations at a normal rate—indeed, with Hump tonnage no longer a limiting factor, had maintained a mission and sortie rate better than that of the Chengtu period. But Ramey and his staff and the aircrews who went out over SEAC realized that for the time the command had become a quasi-tactical force without a vital mission, striking at such targets as Mountbatten would permit or Stratemeyer suggest. Thus preparations for the move to POA bases, though they interfered somewhat with combat missions, were not wholly unwelcome. For that move the outline redeployment plan provided by the JCS held, with minor modifications, insofar as the 58th Wing was concerned. The bomber command was less fortunate; its anticipated role changed with successive shifts in Pacific strategy, and on the eve of victory over Japan the organization, once Arnold's pride but now stripped of its combat units, died quietly like an old man who had outlived his usefulness and his friends.

The stripping had begun on 8 February in a transfer which simplified the proposed redeployment when, at Wedemeyer's request, the 312th Fighter Wing was assigned to the Fourteenth Air Force; the orders read until the end of July but in effect this meant permanently.[106]

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On the same day Ramey reactivated the 58th Bombardment Wing (VH), manning it with personnel drawn from within the command.[107] Until its transfer to a Pacific base the wing headquarters would have no essential function.

Detailed orders for redeployment were provided in a War Department directive of 6 February addressed to General Sultan, who was to provide transportation for personnel and equipment. The first water echelon would consist of shipments of 2,275 and 2,864 men, to sail from Calcutta about 22 February for Tinian and Guam respectively. A second water echelon would embark at Calcutta in April. Two air echelons, each comprising 90 B-29's and miscellaneous aircraft and carrying 1,330 and 1,620 airmen, were to arrive at Tinian and Guam on 1 April and 1 May respectively. No movement dates were given for the rest of the command (Headquarters and Headquarters Squadron, 22d Air Depot, 1st Air Transport Squadron [Mobile], and various other units), but they were to be prepared to move by 1 June, before which time further orders were to be issued. Ramey had already been informed of the general contents of this directive and during February preparations for departure were made.[108]

The first water echelon shipped out of Calcutta, substantially as ordered, on 27 February. An advanced echelon of the 58th Wing flew out via Luliang on 20 March. Four cargo vessels loaded with equipment sailed between 25 March and 4 April. Late arrival of the first water shipment necessitated a rescheduling of departure dates for the air echelons (to 20 April and 1 May) and for the last water echelon of 3,459 men (to 6 May). When that last shipment arrived in the Marianas on 6 June, the transfer of the 58th Wing had been completed without loss of a single life or plane. The Joint Chiefs had intended the use of the Tinian base as a temporary measure until the whole wing could be accommodated on Guam, so that the delays en route cut short the 58th's stay on the former island.[109]

Ramey went along with the 58th as wing commander, General Smith taking over XX Bomber Command on 25 April and continuing preparations for the move in June to a site not as yet designated. In January the JCS had merely stated that XX Bomber Command would be stationed in the Philippines-Ryukyus area, and at Kharagpur there was much speculation as to the future home. In Washington and the Pacific theaters there was some sentiment in favor of Luzon, but a JCS plan developed in March and approved in April stipulated that

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XX Bomber Command should go to Okinawa to provide control for the 316th and other VHB wings to be deployed on that island. In accordance with this design, the War Department on 4 May furnished General Smith with a schedule for the movement of the remaining echelons, to begin on 2 June.[110]

The task of Smith's A-1 section in assembling all command personnel in Okinawa was complicated by the threat of a wholesale dispersal, as officers and men became eligible for rotation according to theater rules. This was less true of aircrews than of ground personnel. After long study by his staff, Ramey had announced on 26 January a policy on combat crew replacement. Rotation was to be governed by the desire to maintain groups at fifty-one B-29 crews each (1.7 crews per UE aircraft) and by the flow of crews from the States. No firm promise was to be made to ship crews home after completing a designated number of combat missions or hours. Instead, crewmen were to be returned when their "operating effectiveness" was considered to be jeopardized by continued combat duty. A more rigid policy was announced for transport pilots—return after 1,000 hours of flight or 18 months in the theater. These rulings allowed but small turnover: in February, for example, with only nineteen B-29 crews arriving as replacements, twenty-four were returned to the States, and three lead crews were sent to Guam on loan.[111]

To prevent a serious loss of experienced personnel not subject to these policies, A-1 sent officers and men to rest camps at Darjeeling, Madras, and Ranikhet, and was liberal in granting forty-five days' temporary duty for rest and rehabilitation stateside—but with orders carefully phrased to insure return to duty with XX Bomber Command. A number of officers and men were allowed to go on temporary duty with other commands or with service schools in the United States; in all, several hundred airmen were spared the tedious wait in Bengal. For those staff sections drawing up administrative and logistical plans for the Okinawa bases the time was fully occupied, but for many there was little to do but pack and wait.[112]

The period of waiting was prolonged by changes in the pattern for air command in the Pacific.* In mid-June General Smith was called to Washington and informed of the latest plans for the disposition of his command. The Eighth Air Force, without a mission since V-E Day, would be converted to a VHB organization with headquarters at Oki-

* See below, pp. 686–89.

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nawa and, with the Twentieth Air Force, would comprise United States Army Strategic Air Forces (USASTAF). Thus supplanted by the Eighth in its function of directing the new VHB wings, XX Bomber Command would be inactivated; its personnel was to form the nucleus of the Eighth's headquarters and might remain or apply for transfer when eligible.[113]

Back in Kharagpur about 27 June, General Smith completed arrangements for the move. During February and March the 383d Air Service Group had moved into the four tactical airdromes around Kharagpur to take over the bases and surplus property left behind. Now, beginning on 3 July, the air echelon left for Okinawa, staging through Bhamo, Luliang, Clark Field, and Guam. The rest of the command sailed, in two lots, on 12 July and 4 August, leaving only a few small detachments in India-Burma.

Smith left with the flight echelon. Preceded by an advanced party and carrying a considerable amount of housekeeping equipment, members of that echelon soon established headquarters under the primitive conditions of an island just secured from the enemy. On 16 July Lt. Gen. James H. Doolittle appeared at Okinawa with his party to take over. Even that ceremony, which marked the passing of XX Bomber Command, lacked the clean, sharp finality which the once-proud organization might have wished. USASTAF had directed "the inactivation of the Headquarters and Headquarters Squadron, XX Bomber Command, with transfer of personnel and equipment made prior thereto to the Headquarters and Headquarters Squadron, Eighth Air Force. The effective date of inactivation to be 0001 K, 16 July 1945." But the radio carrying this general order, delayed in transmittal, arrived on the 17th and it was the 18th before it could be put into effect.[114] This was the end of XX Bomber Command.

In concluding his very able job of field reporting the command historian expressed a hope that some later writer might "ascertain definitely the accomplishments and the contributions of XX Bomber Command to the air offensive against Japan."[115] One would be bold indeed to pretend to satisfy that hope "definitely." From its inception, MATTERHORN was a controversial project, and questions as to its wisdom were not stilled by the command's experiences in CBI. An evaluation board reviewing the record in the autumn of 1944 tried to balance the as yet inconsiderable combat effort against the levy on Hump tonnage which might have been employed in operations of

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more immediate utility. The board's tentative judgment was most cautiously phrased: "There is no question but that strategic bombing pays big dividends and perhaps the diversion of such [logistical] effort to the XX Bomber Command is more than justified in the big picture, all of which can not be seen from this theater."[116] Some individuals have been less equivocal and less charitable in their statements. No one has ventured to indorse the venture enthusiastically. The United States Strategic Bombing Survey studied various aspects of the command's operations; most of the resulting appraisals, appearing in several published reports, are unfavorable, but there is one, curiously inconsistent with the general tone, which makes something of a case for the MATTERHORN project.*

One statement may be made without fear of successful contradiction—that the strategic results of VHB operations from Chengtu were not a decisive factor in the Japanese surrender. This is the most important fact in the story of XX Bomber Command's air war, and there is no intention here, as there has been none in the preceding narrative, to inflate the accomplishments of the command. But it may be useful here to set the command's record against its envisaged purpose, and to speculate as to what better use might have been made of available resources.

Arnold's staff, thoroughly imbued with AAF doctrines of strategic bombardment, saw in the B-29 a weapon with which the Japanese homeland could be hit. In the autumn of 1943 no base area within striking distance of the Inner Empire was available save in China, and for want of a better site the staging fields were located at Chengtu. Difficulties in the supply system were recognized if not thoroughly appreciated and a plausible logistical system was devised, not without some general interest in the possibility of making the B-29 a self-sufficient weapon. On the best advice obtainable from civilian and military experts, a target system was chosen—the steel industry—which seemed to offer important long-term possibilities. The planners did not expect to win the war by strikes from Chengtu; the early diversion of the 73d Wing to Saipan was a token of their preference for other base areas and a critical factor in the failure of the logistical system to meet the original expectations. By this diversion MATTERHORN was doomed to failure before the first mission. In addition to blows at Japanese industry, rated as important but not decisive, Arnold's staff

* See below, pp. 171–75.

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hoped to achieve certain subsidiary ends: to bolster Chinese morale; to take the war home to the Japanese people, badly misinformed by their officials, in raids which might tie down in the main islands fighter planes needed elsewhere; and to combat-test a new plane and a new type of bombardment organization.

As for the immediate combat achievement, that is easily told. In 49 VHB missions involving 3,058 sorties, XX Bomber Command dropped 11,477 tons of bombs; it also dispatched more than 250 photographic sorties. If the original complement of 150 B-29's may serve as a rough index of planes on hand, this would give an average of about 2 combat sorties per plane per month, certainly not an enviable record. Only a small fraction of this effort was directed against industrial targets within the Inner Empire. Some 5,200 tons, roughly 45 per cent of the total load, were carried by planes flying out of China bases, and of that weight more than half was expended in the PAC-AID strikes or against other nonindustrial targets.[117]

During the first four months of operations five missions were sent out against steel plants. In 2 strikes 221 tons were loosed over Yawata, but because of unused plant capacity (not then known to U.S. intelligence agencies), the raids caused "only a negligible drop in production." At Anshan the bombing was effective—in fact, postwar examination of the plant showed damage more severe and more lasting than had been appreciated by the command's staff working from photographic evidence. Three raids in which 550 tons of bombs were dropped caused a loss in production of approximately 200,000 tons of pig iron, 136,000 tons of ingot steel, and 93,000 tons of rolled steel. Because of the tight shipping situation the main incidence of this loss fell on Manchurian user industries rather than on those in Japan, and though success at Anshan verified an early belief in the vulnerability of steel plants, strategic planners realized by mid-1944 that the quickened tempo of the war had rendered obsolete the reasoning which had led to the choice of that target system.[118]

When in October the aircraft industry was named as first-priority objective, Omura became the principal target, receiving about 500 tons in 5 attacks. Only one mission, that of 25 October, paid off; almost half of the building area was destroyed or damaged and very heavy casualties were inflicted. The loss in production amounted to 5.7 months' work.[119] But Omura was not one of the most important aircraft factories.

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None of the other missions against cities in Japan proper—there were only nine in all—was significant, nor were random strikes against alternate targets on the continent. The successful attacks against Formosa and Hankow do not fit into the MATTERHORN picture; neither do the many missions conducted in SEAC. The strategic campaign may be summed up in terms of Yawata, Anshan, and Omura and here one may speak with some assurance: the direct results obtained in the ten missions against those targets did little to hasten the Japanese surrender or to justifiy the lavish expenditures poured out in their behalf.

The indirect results of the campaign are more difficult to assay. Arnold's staff had been optimistic as to the psychological effects of the VLR bombing of Japanese cities. Such an offensive delivered from bases in China, they believed, would encourage that nation to resist, while the unveiling in China of so powerful a weapon as the B-29 would restore prestige to Chiang Kai-shek's government and reduce the damage caused by unfulfilled promises of aid. Those views were shared by Roosevelt, a fact which accounts for his continued support of the project. The USSBS report *Air Operations in China, Burma, India, World War II* is emphatic in the opinion that these results did accrue: that B-29 operations constituted "a tremendous shot in the arm to the Chinese people," and that XX Bomber Command should share credit with the Fourteenth Air Force for preventing an utter collapse of the Chinese will to resist.[120]

The news that the Superforts were raining destruction upon Japanese cities was widely disseminated in China and enthusiastically received; their activities were praised by Chiang Kai-shek in his most important public address of 1944. In the province of Szechwan the Chinese seemed to take a personal interest in the B-29 project; their friendliness was attested by unit historians at each echelon, and throughout China the friendly spirit was manifested in a very practical way by aid rendered under most dangerous circumstances to crewmen who had bailed out of B-29's stricken over enemy territory. The record of the Chinese armies during the MATTERHORN period was not a distinguished one, but at least the Nationalist government did not withdraw from the war as had been freely predicted in the spring of 1944. How much the B-29's contributed to that survival and whether the same end might have been achieved by less spectacular and less expensive means will remain debatable. To the USSBS re-

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porters the contribution seemed great, to "be appreciated fully only by those who were working with the Chinese in China at the time." Men of the XX Bomber Command tended to agree with this judgment; Chennault thought the command a liability rather than an asset in China.[121]

In Japan the attacks from Chengtu caused no such surprise among official circles as had the Doolittle raid. Long before 15 June the mission of the B-29's had been accurately diagnosed from their presence in India and the specifications of the Chengtu fields. But after the first Yawata mission the Imperial government was faced with the problem of explaining to a populace deluded with false reports of the war's progress the undeniable presence of the U.S. bombers over Japan. The concern of official propagandists is indicated by the tone of their broadcasts and news stories, which tended to depreciate the importance of the raids and to exaggerate unreasonably the success of defensive measures. Postwar interrogations have shown that among some Japanese it was the early B-29 raids that first brought doubts as to ultimate victory. However, the intensity and scope of the XX Bomber Command campaign, limited to a few strikes at Kyushu cities, were not great and as a morale factor that campaign was not nearly so important as the mass raids by XXI Bomber Command in 1945.[122]

In their aim of tying down fighter strength in the home islands the planners were moderately successful. When the B-29 threat was recognized in the spring of 1944, the Japanese reorganized General Defense Headquarters at Tokyo. The three air brigades attached to army districts were raised to divisional status; an effort, none too successful, was made to coordinate army and navy interceptor forces; and the First Air Army, an emergency reserve drawn from the training establishment, was set up at Tokyo. The number of fighter planes assigned to General Defense Headquarters, which stood at 260 in June 1944, was increased by several increments: in October the order of battle showed 375, and this strength was maintained pretty constantly until the fire raids of March 1945 led to further reinforcement. XX Bomber Command can be credited, therefore, with having caused the Japanese to withdraw or withhold from active theaters about 115 fighters or about 4.5 per cent of the total number in service.[123]

In regard to combat-testing the B-29 the command's achievements were substantial. The bomber, rushed through the various stages of development in record time, had been deliberately committed to com-

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bat after a brief service testing in hopes that field conditions would quickly uncover remediable weaknesses. The difficult flying conditions in the CBI made that test a strenuous one, and XX Bomber Command met the challenge ably, as the preceding narrative has shown. Through the command's endeavors and those of the Materiel Command at home, the complex mechanism of the great bomber was smoothed out, and corrections and improvements that derived from experience in the CBI were incorporated into planes destined for the Marianas.

Equally important, crews learned to recognize the B-29 for the superb plane it was. This lesson came hard. Pilots and co-pilots of the 58th Wing had been hand-picked B-17 or B-24 men with many hours of four-engine flying time either in combat or as instructors in Training Command schools. After the fashion of flyers they entertained marked preferences for the Flying Fortresses or the Liberators they had flown, and they looked askance at the Superfort, reported to be a "hot" plane to handle and certainly an unknown quantity. Late deliveries cut training in Kansas to a minimum—an average of about thirty hours per man. Mechanical difficulties, especially with the R-3350 engine, were frequent enough in the early days in the theater to nourish the pilots' reserve toward the Superfort. It was only gradually that that attitude changed to one of confidence and affection. The conversion, in the words of the command historian, "was born of fact, fancy, pride, legend—but most important, of actual performance under combat conditions." News of unusual feats spread rapidly to dispel earlier doubts: news of how one pilot brought his overloaded B-29 through a power failure at take-off; of how another made a dead-stick landing when his B-29 ran dry of fuel while approaching its home base; or how a crew would stay with a plane when the prop on a burnt-out engine would not feather, and return safely. Such stories were well authenticated; there were others not officially verified but fully as heartening, such as the widely bruited tale of an eager pilot who in returning from an Omura mission brought his 65-ton Superfort down on the deck to strafe an enemy freight train in approved fighter style.[124]

Crewmen learned more about the intricate equipment of the plane: they found the central fire-control system accurate and dependable; they improved, without perfecting, their knowledge of the radar equipment; they learned the real significance of flight control. And

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these lessons were reflected in improved performance: in fewer aborts, fewer accidents, greater bomb loads, and better bomb patterns. Much of this calculus of bombardment can be read in the impressive charts and graphs prepared by the statistical section of the command's staff, which show in most categories a marked if not an even-paced improvement. Staff work, highly rated in the early days in the theater, became even better. By any reasonable standards the 58th Wing was when it moved to Saipan a most effective combat organization.[125]

No critic has challenged the utility or success of the command's shakedown process. The USSBS *Summary Report* pays tribute to the fashion in which the job was accomplished but suggests that the "necessary training and combat experience with B-29s provided by this operation might have been secured through attacks on Outer Zone targets, from bases more easily supplied."[126] The two implications in this criticism, the one operational and the other logistical, are stated more explicitly elsewhere in the report.

In a section entitled "Hindsight" the USSBS committee expressed the view that the XX Bomber Command B-29's "could have been more effectively used in coordination with submarines for search, low-level attacks and mining in accelerating the destruction of Japanese shipping, or in destroying oil and metal plants in the southern area."[127] This view was not wholly hindsight. Both target systems had been suggested in the COA report of 11 November 1943; both had received support from Navy strategists in Washington and from MacArthur and Kenny in the Southwest Pacific. In view of the inconsiderable results obtained in the Inner Zone it seems possible that a greater contribution might have been made by the B-29's operating in the fashion suggested. But since early 1943 those in Arnold's staff who had to do with the B-29 project had their eyes fixed on Japan; experience in the ETO by the time of the first Yawata mission and the subsequent accomplishment of XXI Bomber Command prove that the AAF's doctrine of striking at the central core of an enemy's industrial power was eminently sound. Only by staunch adherence to that concept of strategic bombardment in the face of efforts at diversion had the AAF been able to achieve its primary mission in Europe, and it was not a mark of stubborn inflexibility that Arnold and his staff held resolutely to the same policy in the war against Japan. And whether with justification or not, this determination was colored throughout by the fear of losing control of the VHB's to commanders who would

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continue to nibble at the fringes of Japan's power or use the B-29 as a Navy auxiliary against shipping.

The logistical argument, that "aviation gasoline and supplies used by the B-29s might have been more profitably allocated to an expansion of the tactical and antishipping operations of the Fourteenth Air Force," has been elaborated by other critics, most vehemently perhaps by Chennault.[128] Curiously enough, the USSBS report on CBI cited above is in marked disagreement with this opinion, and it is perhaps not without significance that the whole of the survey board was made up of AAF personnel. In the opinion of that board, other observers had "overemphasized the logistical support taken from the Fourteenth Air Force in favor of the B-29 operations." The figures cited show the failure of the original self-support plan: of 41,733 tons delivered at Chengtu, 27,216 tons were hauled by ATC, only 14,517 by the command's own planes. Presumably the 27,216 tons would have been added to the 121,565 allocated to the Fourteenth but for the presence of the B-29's in China (though the needs of the XX seem to have helped ATC's India-China Division secure the reinforcements which allowed them to step up deliveries). The board stated that by its strikes at Formosa and Hankow XX Bomber Command did aid in the fight for China, whereas the 69,066 tons delivered to Chinese ground forces went to units which "never engaged in any significant action during the course of the war."[129] This is at best a negative argument and one may readily suppose that the Fourteenth might have accomplished more but for the diversions of transport potential to XX Bomber Command. Although it might have had important effects on postwar China, it is doubtful that an earlier victory would have been achieved in World War II, which was won in Japan, not on the Asiatic continent.

Even if one qualify some of the adverse criticisms, the record of XX Bomber Command was not a successful one. The title for the MATTERHORN plan was "Early Sustained Bombing of Japan." The bombing was neither early nor sustained. It achieved no significant results of a tangible sort and the intangible effects were obtained at a dear price. This failure should not be charged to XX Bomber Command, whose men showed courage, determination, and skill. They lost to an impossible logistics system, not to the Japanese. And though the command was dissolved, its combat units in the 58th Wing were to go on with the war under more favorable conditions in the Marianas.

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SECTION II

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AID TO CHINA: THE THEATER AIR FORCES IN CBI

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CHAPTER 6

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WAYS AND MEANS

THE CBI logistics problem has been touched upon more than once in dealing with B-29 operations. The principal difficulties arose from the great distance separating the theater from the United States, the prior claims of other areas of combat, and the lack of distribution facilities over the vast reaches of the theater itself. Until 1944 these difficulties imposed inescapable limitations on air activity in all parts of the theater, and even after that time prevented the build-up of adequate strength in China, where the barrier of the Himalayas had the effect of lengthening and exhausting the supply line.

In Burma four principal factors contributed to the Allies' final mustering of sufficient strength to drive the Japanese out. One of these was the progress of Allied military operations in the Pacific, which by 1945 brought heavy pressure upon the Japanese from several different directions at one time, and which, with the passage of each week, increased the supply problem for the Japanese in their most inaccessible theater—Burma. The second factor was the development in east and northeast India, as well as on the Burma fighting front, of strong Allied forces, given tremendous flexibility and striking power by Allied air supremacy. The third factor was the "miracle of production," both in Britain and the United States, which brought into CBI on an unprecedented scale the supplies and equipment needed to press the advantages already established. And the fourth was the successful build-up within India, as well as in parts of Burma and China, of an extensive and well-coordinated service of air supply and maintenance.

The India Base

Beginning in 1942 India served as the base for all AAF operations against the enemy in Burma and for all aid, of whatever sort, for-

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warded to China. Since the ports of Bombay and Karachi on the west were the only ones of any size free of enemy attack in 1942, American forces were compelled to depend upon them, and thus upon the extraordinarily inadequate trans-India transport facilities. Not until 1943 did Allied air superiority over the Bay of Bengal make it possible to use the full port facilities of Calcutta, which, though separated from the forward bases by cumbersome communications, at least had the advantage of being relatively close to the centers of military operations. Assam bases of northeastern India served as take-off points for planes flying the Hump into China, and as important supply and maintenance bases for tactical air operations in Burma. In the provinces of Bengal and Assam, therefore, the major installations of the CBI Air Service Command came to be situated.

The CBI Air Service Command came into existence on 20 August 1943 as the successor to X Air Force Service Command.[1] The establishment of a separate air force in China the preceding March had been followed by activation of a separate XIV Air Force Service Command in May under Brig. Gen. Julian B. Haddon. That organization, however, never attained anything more than a tentative status, although General Haddon put forth every effort to save it from failure. The difficulty lay in the fact that heavy repair and overhaul still had to be done in India and in the fact that all supplies had to come into China by way of India. Furthermore, aircraft of the Air Transport Command, which carried supplies to General Chennault's forces from the Assam valley, continued to be serviced by the X Air Force Service Command. The plan of a separate service command for the Fourteenth Air Force might have succeeded had the Fourteenth set up its own air depots and service groups on the Indian side of the Himalayas and been wholly responsible for their operation; but this would have led to a duplication of facilities impossible to justify with the prevailing shortages of personnel and equipment. Accordingly, it was decided to activate the China-Burma-India Air Service Command with responsibility for both China and India-Burma. Brig. Gen. Robert C. Oliver assumed command on the same day that Maj. Gen. George E. Stratemeyer took over the newly activated Headquarters, Army Air Forces, India-Burma Sector, China-Burma-India Theater.[2] General Oliver became chief of staff for maintenance and supply on Stratemeyer's staff; as commanding general of the Air Service Command he

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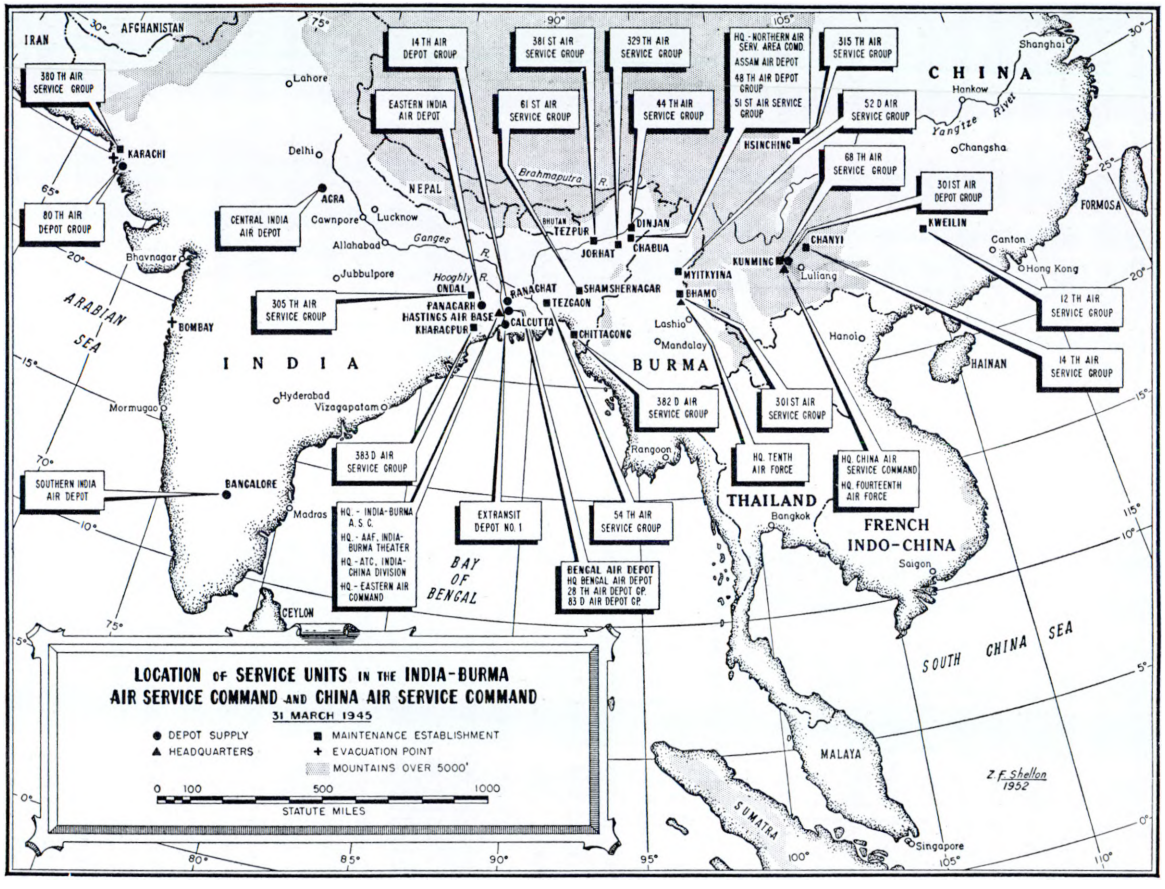

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was responsible for the supply and maintenance of all American air forces in China, Burma, and India.

To allow for the maximum decentralization consistent with unified control, the new command established area commands in each of the main centers of service activity: China, Assam, and Calcutta. The 5308th Air Service Area Command (Provisional) was activated at Kunming on 30 October 1943 under Col. Reuben C. Hood;[3] its provisional character was changed on 20 July 1944, when it was redesignated the China Air Service Area Command.[4] The 5309th Air Service Area Command (Provisional), organized at Chabua on 19 November 1943 with Col. Daniel F. Callahan commanding,[5] was redesignated the Northern Air Service Area Command on 20 July 1944.[6] In the Calcutta area, the 28th, 47th, and 83d Air Depot Groups, all operating within a few miles of each other and collectively known as the Bengal Air Depot, were provided with a supervising headquarters on 4 December 1943, designated the 5317th Air Depot Headquarters (Provisional).[7] In addition, the headquarters of CBI Air Service Command, which moved to Hastings Mill near Calcutta in the spring of 1944,* exercised direct control over other installations in that area. In May, Maj. Gen. Thomas J. Hanley, Jr. replaced General Oliver.[8]

Besides the area commands, there were several air depot and service groups located at strategic points for the big build-up that reached its peak in April 1945. Of special interest among these was the Bangalore Air Depot, later redesignated the Southern India Air Depot, which was a supervising headquarters for the Hindustan Aircraft Factory. The factory, which was owned by the governments of India and Mysore, had been promoted in 1942 as a repair base for air force operations by American interests headed by Mr. W. D. Pawley. To facilitate negotiations, the Indian government acquired the rights of Mysore for the duration of the war and retained the services of the American promoters to operate the plant. Early arrangements to service AAF units on a job basis proved unsatisfactory, with complaints of both cost and inefficiency. Through a series of agreements with the Indian government, the first made in July 1942 and the last in September 1943, Tenth Air Force representatives acquired the right to direct the factory's operations, the Pawley interests meanwhile having been

* At Hastings Mill, fifteen miles from the center of Calcutta, were also located the headquarters of Eastern Air Command, the India-China Wing, ATC, and the AAF India-Burma Sector, CBI.

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bought out.[9] Thereafter, the CBI Air Service Command ran the plant as managing agent; the 84th Air Depot Group which had been activated at Bangalore on 21 July 1943 and later the Bangalore Air Depot —manned by the 84th—was in charge of its operation.[10]

By the beginning of February 1944 the strength of the CBI Air Service Command reached 12,087 and in that month jumped to 17,442. In March an increase of another 5,000 was made. Then leveling off, the command showed only gradual increases until December when it reached 26,500, a thousand more than its strength in November. In April 1945, at the peak of the war in Burma, the India-Burma Air Service Command* had a complement of 35,148, a gain of 8,000 over March;[11] this increase, however, included engineer units assigned from the Tenth Air Force.[12] The strength of the India-Burma Air Service Command in April 1945 was the largest of any command in both sectors or theaters throughout the entire war. In addition, at this time there were 7,530 air service troops in the China Air Service Command.

In spite of the numbers being assigned to the CBI Air Service Command in 1944, there were personnel shortages in India, and greater ones in China. New tactical units were going into operation more rapidly than servicing organizations could be received and trained for places in the field, even though nine air service groups and one air depot group had been brought into the theater between January and August 1944. General Stratemeyer summarized the situation in mid-July when he asked Washington to advance shipping dates for needed service units.[13] He pointed out that service groups, spread extremely thin, were extended to the point where they could not adequately provide for additional combat units. The 3d Combat Cargo Group, for instance, was already in full operation, though inadequately supported, and since the 1st Combat Cargo Group was expected to be put into operation as soon as it arrived in the theater, more service groups were obviously needed. At the same time, General Stilwell sent a radiogram to Washington offering to waive unit and combined training of four special airdrome squadrons, two special service groups, and one air depot group, provided readiness dates could be advanced. He also asked that the 61st Air Service Group be sent be-

* See below, p. 198, for the splitting of CBI Air Service Command into the India-Burma Air Service Command and the China Air Service Command, effective 12 December 1944.

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fore its scheduled date of September.[14] In August General Stratemeyer, seeking additional fighter squadrons for the 1st Air Commando Group, again pointed out the need for service troops, stating that the theater was short two standard service groups and three service squadrons provided for in the standard troop basis. This was in addition to the shortage of special service groups for the combat cargo groups.[15] By the end of February 1945, however, the personnel needs of the India-Burma Air Service Command were almost satisfied: three standard and three special air service groups had arrived in the theater after October, and the 14th Air Depot Group was due at Ranaghat early in March. Only in certain categories of specialized training did critical shortages still exist.

Shortages of military personnel in India were in some measure overcome by the employment of civilians, most of whom were Indians. At the Hindustan Aircraft Factory several thousands were hired, and shortly after the establishment of the 3d Air Depot in June 1942, civilians were employed at that station to work in the messes, perform guard duties, serve as clerks and typists, load and unload supplies, and assume other responsibilities for which they were qualified. As other installations were built, the policy of employing civilians was extended. They were used in all capacities for which the use of military personnel was not mandatory. Most of them were employed in so-called housekeeping duties, but many thousands were employed as technicians and skilled workmen; by simplifying the tasks and introducing production-line techniques, it became possible, under the supervision of American technicians, to use civilians without particular training in work that would have required great skill if done by single workmen. At the beginning of 1944 over 10,000 civilians were employed by the command, exclusive of those at Hindustan Aircraft. By June 1944 over 20,000 were employed, at the end of the war in Burma over 37,000, and by the end of July 1945 there were more than 45,000. Most of these employees were at the Bengal Air Depot: some 8,390 civilians were employed there in June 1944, and this figure rose sharply in succeeding months until a peak was reached in July 1945 with 19,283 employed; of these, 15,236 were semiskilled or unskilled workers. Among air service groups, the 305th at Ondal employed the greatest number of civilians, 1,500 in May 1944 and almost 3,000 in April 1945. About 2,500 of these were semiskilled or unskilled.[16]

The cost of civilian employment was charged to reverse lend-lease,

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except for clerical help during the early months, which was paid for directly by Army finance officers until August 1944 when it too was transferred to the reverse lend-lease account. Total wages ran to less than $500,000 a month during 1944, and in July 1945 costs ran to only $787,268.92 when employment stood at 45,408. Thus, the average wage in July was about $17.33 for each worker, the low figure sometimes being explained by the predominance of unskilled labor and the fact that some workers did not work the entire month; comparison with other months, however, indicates that that figure was little less than average for a full month's work. Many skilled workers were paid considerably more than the average wage.[17]

The growing strength of the CBI Air Service Command was preparatory to expanding operations, which were reflected in the opening of the Calcutta port. Because air force units were the principal users of all supplies in CBI, the air service command was called upon for close coordination of plans with other responsible agencies, especially since the responsibility for the movement of gasoline, quartermaster supplies, and other common-user items belonged to the Army Service Forces. The arrival of troops and supplies at Indian ports had to be prepared for by making every effort to set up in advance the facilities that would be needed to handle their movement. Sometimes extra labor was required while at other times special machinery had to be constructed; and storage space on the docks always had to be arranged for until movements to interior depots could be accomplished. If rapid delivery were required, air transport, or an equally expeditious substitute, had to be provided, for which a Movements Control Section, set up in the fall of 1943 by the CBI Air Service Command, bore the chief responsibility.[18]

Typical of the problems falling to the Movements Control Section was speeding up transportation of critical Air Corps supplies within the theater. Previous dependence on air transport and slow freight trains had failed to meet the demands of operating units, either because of the prior claims of forward areas on aircraft or because of the inadequacies of normal rail service. For example, rail shipments from Calcutta to the 54th Air Service Group at Tezgaon had been requiring from 10 to 15 days, even though the distance was less than 300 miles by air. To step up deliveries, in 1944 an "express wagon service" was successfully tested on the Calcutta-Tezgaon run.[19] In July the 54th Air Service Group stationed a four-man detachment with its

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own trucks at Barrackpore to load a car each day and attach it to a parcel train. The loaded car moved by broad gauge to Goalundo Ghat, where another detachment of one officer and six enlisted men transferred the goods to a river steamer for movement down the Ganges to Narayanganj. At this point, another detachment shifted the cargo again, and movement was made by truck to Tezgaon. The route was much more direct than that used by regular freight, and despite the time consumed in shifting cargo, time in transit was reduced to approximately thirty-six hours, a saving of eight to thirteen days. The cargo carried on the express-wagon service fell in the category of third or fourth air priority; by the end of July only one air transport flight a day was needed to carry all other priority material from the Bengal Air Depot to the 54th Group.

Negotiations begun on 18 July among representatives of the Movements Control Section, the Army Service Forces, the British Deputy Director of Movements, and the Indian railways resulted in an announcement on 31 July of plans to begin a daily express-wagon service on 10 August for the Calcutta-Chabua and Chabua-Jorhat runs. Wagons at Sealdah yards, Calcutta, were closed for loading at 1730. Five hours later, they left Calcutta on a parcel-goods train. Going by way of Parbatipur, Amingaon, and Pandu (via ferry), the goods arrived at Mariani for Jorhat at night on the fourth day, and at Tinsukia for Chabua on the morning of the fifth day. Another express service was worked out for the Calcutta-Bangalore run, and on 10 August it was announced that triweekly service would start immediately. The schedule called for one railway car to leave Calcutta every Tuesday, Thursday, and Saturday. On the same days, a car left Bangalore for Calcutta. Although regular rail transportation continued to take eighteen days, the express cars got through in six; this was further reduced to four days in September when the express cars were attached to passenger trains instead of the parcel trains.[20] Both of these express services resulted in a saving that in September, with over 853 tons carried by the new service, amounted to some 256 plane lifts, if measured by a 3⅓-ton net load per airplane. Over half of this was on the Calcutta-Chabua run.

No less representative of the way in which the CBI Air Service Command contributed to improvement of operating conditions was its successful effort to provide a better system of stock control. War reaches perhaps its dullest level in the bookkeeping which controls the

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requisition and distribution of supplies, but when the system of control is at fault, planes which otherwise would fly are grounded. In the supplies delivered from the United States, the theater was by 1944 much more fortunate than it had been earlier, but the very size of the theater exposed it to the special risk of idle surpluses in one place and shortages in another. To guard against this danger, two main centers of stockage were established, one in Bengal and one in Assam.[21] All units, according to their geographical location, made requisitions on one of these two centers. At the same time, specialized depots for certain technical supplies prevented the danger of overcentralization at the Bengal Air Depot, which served as the main center of stockage. The Central India Air Depot at Agra became the supply point for Curtiss aircraft; the Eastern India Air Depot at Panagarh specialized in aircraft combat materials; and the Delta Air Depot at Ranaghat handled tires and tubes, night-flying equipment, prefabricated hangars, shop and machine tools, aerial-delivery equipment, cordage, fabrics, leather, belly tanks, and wing assemblies. Moreover, local procurement under lend-lease agreements was used to the fullest in order to lighten the burden upon the requisitioning channels.[22]

To achieve maximum utilization of supplies under the new control system, frequent inventory reports were required. To distribute the work load at service command headquarters, the dates for regular reports from subordinate units were staggered throughout the month, and by the spring of 1945 electrical accounting machines had been installed for handling stock-balance and consumption reports. The reports which came in from seventeen air depot and air service groups in the India-Burma Theater, and from five groups in the China Theater, were processed by the machines so as to produce a complete inventory of all stock on hand in both theaters approximately eight days after receipt of reports. Some 163,532 different items bearing stock or part numbers were covered, which represented a consolidation of over 435,000 field stock-record cards.[23] As before, use of local manufacture for a long list of items—among others, tires and tubes, supply-dropping parachutes, alcohol, lumber, oxygen, paint, cordage, turpentine, paper, wax, and ink—served to relieve the pressure on facilities for shipment from the United States.

In order to prevent excessive stocks of any one item from accumulating at one place, over-all responsibility at CBI Air Service Command Headquarters was divided between two main sections: the Air-

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craft Section kept check on planes, engines, accessories, and hardware; the Equipment Section on other equipment. By a strict check of activity on both a 30-day and a 120-day basis, these sections established more accurate estimates on consumption rates and managed to put inactive stocks into useful channels or to relieve the pressure on storage facilities by shipping home some surplus inventories.

Bombs, Fuel, Aircraft

The supply of ammunition was at no time critical during the last two years of the war. Measured by the usual standard set up to test the size of an adequate reserve, that is, six times the normal expenditure, reserves were actually too high until full-scale operations in the Burma offensive altered the picture in November 1944. In March 1944, when reserve stocks were at their highest, 100,000,000 rounds of .50-caliber ammunition,* for instance, were on hand, with expenditures running to only 730,000 rounds for that month. During months of greatest expenditure, rounds on hand for all types of ammunition exceeded rounds expended by several times: nine times for .50-caliber ammunition in May 1945; thirty-nine times for 20-mm. in April 1945; and twenty times for 75-mm. in January 1945. In June 1945, with only 12 rounds of 75-mm. ammunition expended, 69,747 rounds were on hand. So plentiful were the reserves that excess quantities were sent to the Pacific Ocean Areas in the last few months of the war.[24]

As in other theaters, however, serious shortages were experienced in the supply of bombs.† Some supply officers in CBI showed a natural inclination to attribute their difficulties to failure of American production, but this has been vigorously denied by Donald Nelson, who claimed that after 1942 no American soldier at the front went without munitions because of a production failure.[25] He attributed the difficulty to the shortcomings of intra-theater organization. The widely separated operational bases in CBI forced stockage of bombs at many different and distant points, and the cost of any attempt at redistribution tended to make bomb supplies expendable only at those bases which originally received them. As a result, some stocks remained inactive while operational demands at other points in the theater created

* The ammunition most used by the AAF in India, Burma, and China. Expenditures and losses of .50-caliber ran to 64,244,000 rounds during 1944 and 1945, as compared with 411,000 rounds of 20-mm. and 22,955 rounds of 75-mm. ammunition. Expenditure of other types was negligible.

† For the problem in ETO, see Vol. III, 581–82.

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critical shortages of the desired type of bomb. This situation was in part a penalty imposed by the great distances and the marked inadequacies of transportation in CBI, but the trouble must also be attributed to a failure at top planning levels to make adequate allowance for the unavoidable difficulties.

At no time in 1944, and not until June 1945, did adequate reserves exist for the 100-pound, 250-pound, and 500-pound general-purpose bombs.[26] The greatest reserve stock of 100-pound GP bombs was in July 1944: 118,388 of them, with expenditures running to only 6,395. In succeeding months expenditures increased and reserves fell almost by the amounts expended, while resupply of this type bomb from the United States was negligible after July 1944. In May 1945 only 36,377 bombs of the 100-pound GP class remained to cushion an expenditure of over 11,000 a month, and the situation in respect to this type might have been worse had not enemy personnel become so important a target during the last ten months of the Burma war as to permit free use of plentiful stocks of 100- and 260-pound fragmentation bombs. Stocks of the 500-pound, as well as the 250- and 1,000-pound bombs, declined throughout the latter part of 1944, and the reserves of them were never adequate to support abnormal expenditures. The 1,000-pounders almost disappeared in 1945 at an average of 2,700 bombs a month. Replenishments were meager. Azon bombs, used in B-24's by the 493d Bombardment Squadron of the 7th Group and after April 1945 in P-38's equipped with bombardier noses, were supplied in quantities equal to the need.[27] The number of incendiary bombs was also sufficient, although authorized stock levels were not maintained except for the quick-opening clusters using the M50 and M69. Expenditures, however, never ran high, and reserves were always about twelve times the current expenditures.

Not until June 1944 did the CBI Air Service Command assume any responsibility for the handling of aviation gasoline and lubricants; before that time the Army Service Forces was charged with deliveries to the theater, British agencies attended to allocations, General Stratemeyer allocated fuel among AAF units, Army engineers had charge of pipeline construction, and ATC controlled storage in the Assam region.[28] Complaints from using agencies were frequent, and the Fourteenth Air Force objected especially to the policy of having ATC in the dual position of distributor and consumer.[29] A proposal to meet this objection and put the CBI Air Service Command in control of

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Assam stocks met with opposition from ATC, which did not relish surrendering personnel to the service command in transferring the responsibility. The CBI Air Service Command, however, took over in Assam early in June.[30]

Improvement in the stockage and delivery of fuel to consuming units owed much to 6-inch and 4-inch pipelines from Chittagong to Tinsukia, and to the 6-inch pipelines running from Calcutta to Kharagpur and to Tinsukia, all of which had been completed before the service command assumed its new responsibility. From Tinsukia a 4-inch line reached Myitkyina in December 1944. Despite these facilities, it was still necessary, however, to rely at many places on tank cars, barges, and trucks.[31] Tank wagons operated from the ports, and at transshipment points were drained into storage tanks, from which other tank wagons were filled. Barges operated up the Hooghly and Brahmaputra. Gasoline emptied from damaged drums augmented the supplies of bulk gasoline, which were generally sufficient for operations from Assam into China by the Air Transport Command. Drum gasoline was used in China.

During the last half of 1944 gasoline supplies were gradually improved for all operational units. By November supplies at Chabua, Dinjan, Mohanbari, Sookerating, Misamari, Tezpur, and Jorhat were, for the most part, adequate. Because of diversions, acute shortages existed at Jorhat and Sookerating in early December, but after the 20th of that month stocks on hand (that is, exclusive of the reserves that all fields maintained for emergency evacuation) never dropped below a day's consumption rate at any of these several fields. Stocks were established at Myitkyina in mid-December, but so great was the consumption rate that stocks were never large: in June 1945 they declined to less than a day's supply. In the preceding December and January Dergaon was also used as a gasoline supply field, and early in January Kurmitola-Tezgaon began operations as a supply field.[32]

Consumption in October 1944 had risen to about 400,000 imperial gallons a day for all fields. This rate was increased rapidly as the war in Burma reached a climax. In the first week of May 1945 consumption at all fields was over 700,000 imperial gallons a day. Then, as soon as the Burma war machine could be stopped and redirected toward aiding China, the rate again rose—this time to the highest figures: on 25 July the consumption rate reached almost 900,000 imperial gallons (about 1,080,865 standard American gallons) a day. It was during this

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month that the Air Transport Command broke all records in carrying tonnage into China. Consumption during 1945 was greatest at the Kurmitola-Tezgaon station, where it reached over 262,000 imperial gallons in the first part of May. This reflected activity on the part of the Air Transport Command, of the combat cargo groups, and of tactical units operating in Burma.

At the beginning of 1944 AAF units in CBI had about 1,500 airplanes, of which approximately 900 were in commission. At the end of the year there were over 4,000 with 2,500 in commission. During the critical months of March, April, and May 1944, when the Allied forces gained air superiority in Burma, American aircraft strength in India, Burma, and China ranged between 1,700 and 2,500. In 1945 the number of aircraft varied as indicated by the following table:[33]

	31 Jan.	*31 Mar.*	*30 Apr.*	*30 June*	*31 July*	*31 Aug.*
Fighters	1,238	1,254	1,236	1,316	1,410	1,356
Bombers (M)	387	387	386	389	431	419
Bombers (H)	158	184	189	182	156	133
Reconnaissance	160	209	204	206	171	167
Transports	1,213	1,301	1,325	1,436	1,444	1,475
Training and Liaison	536	540	538	513	487	485
Gliders	367	310	211	121	79	57
TOTAL	4,059	4,185	4,089	4,163	4,178	4,092

As these figures and those in table below emphasize, fighter and transport aircraft played the most important roles in CBI.*[34]

Among fighters, the old P-40 gave way to P-38's, P-47's, and especially to P-51's. There had been 44 P-38's assigned to the theater at the beginning of 1944; in March of that year the first P-47's, 100 of them, reached Karachi by water; and to the 60 P-51's already in the

* AIRCRAFT STRENGTH BY TYPES IN CBI, DECEMBER 1944–JULY 1945

	Dec.	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*
P-40	205	182	171	134	109	95	76	62
P-38	92	109	140	205	190	225	280	231
P-47	405	379	394	372	350	336	326	296
P-51	417	492	510	482	527	518	556	753
P-61	33	32	33	32	36	33	53	53
B-24	163	157	170	180	185	180	171	147
B-25	397	382	379	386	388	418	373	345
C-46	350	408	431	472	466	592	614	611
C-47	500	503	500	493	505	501	488	479
C-54	23	43	52	74	99	100	107	132
L-5	349	369	385	377	382	355	378	361

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theater at the close of 1943, over 500 more in 1944 and 669 in 1945 were added to make this type the most numerous in both theaters. With the P-51 and P-47 capable of carrying fragmentation bombs and strafing, it was considered advisable to concentrate upon these types rather than to maintain an excessive number of bombers.

In all, there were over forty types of aircraft assigned to the India-Burma and China Theaters in the last months of the war.* The following table shows the distribution of aircraft types among the principal commands of the theaters during 1945:

	C-46	*C-47*	*C-54*	*B-24*	*B-25*	*A-26*	*P-38*	*P-40*	*P-47*	*P-51*	*L-5*
AAF IBT											
31 January	93	134		1	37			3	97	40	192
31 March	99	138		1	40		3	2	110	35	204
31 July	171	71		54	35		2		41		6
ATC											
31 January	255	160	43	14	11						6
31 March	333	142	74	8	10						7
31 July	330	167	132	1	33						10
Tenth AF											
31 January	5	149		60	106		47	3	140		97
31 March	6	140		58	114		87	2	132		100
31 July		62		2	54	38	103	2	73	82	167
Fourteenth AF											
31 January		35		51	56		20	47	51	324	54
31 March		38		73	61		30	32	55	317	41
31 July	21	76		51	72	22	19	13	59	228	125

The C-46 and C-47 bore the brunt of transport operations, but the C-54, first assigned to the theater late in 1944, was of growing importance through the last months of ATC's operations, being used on the Trojan Run from Calcutta to Kunming. The Fourteenth and Tenth Air Forces used the C-47 mainly for supplying their units in the forward areas, and combat cargo and air commando groups also depended chiefly on the C-47, though they also had many C-46's. Of the 600 C-46's in the theater in July 1945, 330 were assigned to the Air Transport Command. The C-87 and C-109 were also used by ATC during 1944 and 1945, but their numbers never reached 100 for either type. Transport aircraft, like the C-46 and C-47, were needed in such numbers that any diversion of manpower from their maintenance would have seriously reduced the efficiency of the cargo-carrying units. Of the medium bombers in May 1945, 44 were assigned to units

* The glider CG-4 was introduced into the theater in large numbers during 1944 and was used in the second Wingate expedition in the spring. At the end of the year over 300 of this type aircraft remained in the theater, but their numbers were decreased in 1945. At the end of July there were but twenty-nine left.

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under the theater headquarters, 82 to the Fourteenth Air Force, and 100 to the Tenth Air Force. The A-26's, introduced into the theater in June 1945 to replace the B-25, were assigned to the Fourteenth and Tenth Air Forces for use in China.

Because of the jungle-type warfare expected by Allied commanders, it was anticipated that a great demand would develop for supply-dropping equipment. The CBI Air Service Command had the responsibility after August 1944 for procuring the parachute and its harness, leaving the procurement of the container to the Army Service Forces. In meeting this responsibility, the command made full use of Indian manufacturing facilities, and cut down on shipping requirements from the United States. Although the parachutes made in India were not as well packaged as the American-made ones, they were entirely satisfactory for their purpose. In August 1944 some 52,506 Indian-made parachutes were consumed in the India-Burma Theater, with 9,485 more in China, compared to 4,169 American-made parachutes consumed; in November of the same year over 78,000 Indian-made parachutes were used, as against 4,911 American-made. No American-made parachutes were used in China. By January 1945 the demand for supply-dropping parachutes decreased sharply, since a larger number of serviceable airstrips had been overrun in Burma, permitting transport-plane landings.[35] At the end of the Burma campaign over a half million supply parachutes were on hand.

Many other items of supply could be mentioned in a longer account than the present one. For instance, Signal Corps supplies were a special problem, often failing to function properly in the CBI theaters: packing agencies in the United States did not provide protection against the damaging effects of moisture and fungus.[36] Motor vehicles for air force use were also a problem, always being provided in numbers less than those authorized. When the Burma Road was opened in March 1945, the air forces suffered a sharp reduction even in their authorized number of vehicles.

Maintenance

Maintenance in CBI suffered from a variety of difficulties—among others, the extreme heat, the high humidity, the great distances—but especially from shortages of spare engines and parts. Though improvement of conditions came only slowly until the last year of the war, a change at that time marked a decisive turn for the better, as the fol-

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lowing table of engine supply (excluding the B-29's R-3350) from August 1944 to the end of the war clearly shows:[37]

Period Ending	*Total Engines*	*Total Installed*	*Total Spares*	*Serviceables*	*Repairables*
31 August	9,774	5,131	4,463	2,650	1,993
30 September	9,439	5,395	4,044	1,944	2,100
31 October	9,838	5,604	4,234	2,061	2,173
30 November	10,794	6,124	4,670	2,056	2,614
31 December	10,765	6,218	4,547	2,167	2,380
31 January	11,100	6,398	4,702	2,469	2,233
28 February	11,732	6,718	5,014	2,797	2,217
31 March	14,271	6,901	7,370	4,428	2,942
30 April	14,261	6,960	7,301	4,432	2,869
31 May	16,506	7,231	9,275	5,581	3,694
30 June	17,090	7,307	9,783	5,981	3,802
31 July	16,330	7,305	9,025	5,947	3,078
20 August	15,956	7,291	8,665	5,654	3,011

At no time after March 1945 did the number of installed engines exceed the number of spares. Of still greater importance was the fact that about two-thirds of the spare engines were kept serviceable, which gave the tactical and transport units a type of support that allowed for more risks than could ordinarily have been taken in the early stages of the war. In some instances, stocks fell below the ninety-day consumption standard, but with maintenance as steady as it had become by 1945, operations were not affected.[38]

Experience had demonstrated that about 4 per cent of all types of aircraft in India-Burma and China could normally be expected to be out of commission for lack of spare parts (AOCP) because of the normal difficulties in distributing supplies over the long distances, but when the figure rose above 4 per cent, it was considered a matter of critical scarcity rather than a problem of distribution. By this standard, there were not enough spare parts until January 1945. The average for the nine months preceding this showed 5.3 per cent of the aircraft in India, Burma, and China out of commission for lack of parts; in April, May, and July 1944 this figure was over 6 per cent, but in September and October, it fell to 4 per cent. In the first three months of 1945 the figure stood at less than 4 per cent, and at no time during the remaining months of the war did it rise to 5 per cent, counting India-Burma and China together. For India-Burma alone, the AOCP rate varied from 2.8 to 3.2 per cent throughout 1945, but in China, it rose from 5 per cent to 9.3 per cent in 1945.[39]

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If the supply of spare parts from the United States had much to do with the improvement of air service during the last year of the war, it is also true that the resources and ingenuity of air service command personnel in India, Burma, and China had much to do with the improvement, too. The Bangalore factory, once it was equipped, manufactured many of the required tools and instruments. One of the best examples of improvising equipment came at the end of the Burma war, when the 7th and 308th Bombardment Groups were placed under the operational control of the India-China Division of the Air Transport Command to haul gasoline into China. To convert B-24's into gasoline-carrying aircraft, kits to install droppable bomb-bay tanks were made up under the supervision of the Southern India Air Depot. A standard piping manifold was designed to allow withdrawal of gasoline from the bomb-bay tanks through two outlets at the same time, and to facilitate emergency use of bomb-bay gasoline during flight through a connection with the engines. By means of the manifold, gasoline could also be drained from the auxiliary wing tanks into the bomb-bay. Maximum safety in flight was thus achieved, and rapid unloading with the maximum delivery of gasoline to China was made possible.[40] Another example of conversion was the modification effected in the P-38 to make it serviceable for Azon bombing. "Droopsnoots," or bombardier noses, were built into ten P-38's during a period of fifty-one days in the spring of 1945. The standard M9 bombsight, the Azon Bomb Directional Control, and the automatic radio-bomb-release transmitting equipment were installed.[41]

The command's basic maintenance problem, however, was meeting the normal requirements of operational units. Although production-line methods had been employed to some extent even in the earliest days of the command, efficiency had been hampered by inadequate planning, decentralized scheduling, improper supervision, inadequate training, and the lack of physical facilities for full-scale operations. Now, skilful employment of unskilled native labor, an in-service training program, and a plan for specialization by key installations in the theater all combined to solve the problem. Thus, the Bengal Air Depot specialized in the repair of engines, including the R-3350 for the B-29's. Although the R-1830-43/65 and the R-1830-92 were repaired at both Agra and Bangalore during 1944, near the end of the war even these engines were scheduled for repair only at the Bengal depot. This brought all supply and training problems for engine repair into a sin-

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gle area, and resulted in economy of effort. The Bengal Air Depot also came to do most of the repair on generators, starters, carburetors, turbosupercharges, magnetos, cooler assemblies, and gyro instruments. At Bangalore the air depot or factory overhauled the B-24, C-87, C-109, C-47, and in 1944 the B-25. It also repaired various accessories for these aircraft, manufactured tools, repaired gyro instruments until the Bengal Air Depot took over these functions, repaired other instruments, and overhauled the R-1830-43/65 engine for the B-24 until near the end of the war. In 1944 the R-2600 engine for use in the B-25 was also repaired there. The air depot at Panagarh specialized on major overhaul of the B-25, P-38, P-47, P-51, liaison aircraft, and, in June 1945, of the A-26; it also repaired accessories for these aircraft, tested aircraft assembled at the Bengal Air Depot, and at the end of the war was ready for overhaul of Curtiss propellers. The air depot at Agra specialized on the C-46 and its accessories, and in 1944 repaired the Pratt & Whitney R-1830-92 for use in the C-47. It also did overflow work on C-47 aircraft.

The achievement is indicated by the percentage of planes kept operational: for both India-Burma and China in January 1944, 58 per cent of the aircraft were in this category; in June, 69 per cent; in September, 52 per cent; in November, 57 per cent; in December, 62 per cent; in March 1945, 70 per cent; in May, 72 per cent; and in July, 64 per cent. This covered all types, including gliders. At no time after June 1944 did the percentage of aircraft in commission in operational units fall below 73 per cent, and for the most part in 1944 and early 1945, it was around 78 per cent. In May 1945, when the India-Burma Air Service Command was no longer responsible for third echelon maintenance in the China Theater, the percentage reached 83 per cent. Aircraft in commission assigned to American units of the Eastern Air Command averaged more than 83.6 per cent for 1944 and 1945.[42] And these figures should be read in the light of the very great increase in the number of planes assigned to CBI, one for which there was no parallel increase of service command strength.

The task of airfield construction was not a direct responsibility of the CBI Air Service Command; that job belonged to the engineers, working under planning operations of the air service command. The construction of B-29 bases has been recounted earlier,* and so it is necessary here to give notice only to the work of the engineers in sup-

* See above, pp. 59–73.

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port of the advance into Burma. The Burma offensive had been launched with air support from bases developed in 1942 and 1943 in Bengal and Assam. After Myitkyina South airfield was captured in May 1944, it was converted into an all-weather field by the 879th Engineer Aviation Battalion. Although the siege of Myitkyina forestalled other airfield construction for some months, in September, after Myitkyina had fallen, a fair-weather field was built at Sahmaw. By November the Japanese were in retreat, and airfields sprang up in quick succession, all constructed by engineers assigned to the Tenth Air Force. Col. Manuel J. Asensio, Tenth Air Force engineer, worked under the theater air engineer, Brig. Gen. S. C. Godfrey. Fair-weather fields were built at Mawlu and Momauk in November; at Bhamo, Indaw West, and Katha in December; at Panghkam, Bahe, and Yanbo in January; at Mu-se and Kutkai in February; at Mong Mit, Lashio, Mong Long, and Hsipaw in March; and at Namsaw in April. All-weather fields were completed at Sahmaw and Myitkyina North in November; at Myitkyina East in December; at Namponmao in January; and at Bhamo in April.[43] All of this construction was completed under actual combat conditions.

On duty with the American air forces in the India-Burma Theater were some fifteen engineer units. Some of these were assigned to road construction or maintenance, as the 823d Engineer Battalion or the 1905th Engineer Battalion were on the Ledo Road; others were assigned to crash-fire protection, like the 2085th Engineer Fire-Fighting Platoon; and others were assigned to airfield construction, the 853d, 879th, 930th, 1877th, and the 1888th Engineer Battalions.

The China Base

Supply and maintenance for the air forces in China were always tenuous and uncertain. In 1942 only a single base unit had been set up in Kunming.[44] This, together with a Chinese factory, constituted the only air service available to Chennault's forces at that time. Fourth echelon repair, when it was done, had to be accomplished at Indian bases under jurisdictional control of the Tenth Air Force. The establishment on 19 May 1943 of the XIV Air Force Service Command[45] offered no real solution to the problem, as Chennault had predicted,[46] and in August of that year its place was taken by the 5308th Air Service Area Command (Provisional), an organization which functioned as a part of the newly established CBI Air Service Command. This

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set-up successfully removed controls from the Tenth Air Force, but, despite efforts to improve the services in China, the handicaps imposed by shortage of fuel and the local need for fourth echelon repair continued to affect China air operations.

Not until February 1944 did the China Theater obtain two full-fledged air service groups, the 12th at Kweilin, the 68th at Kunming. In April the 315th Air Service Group was set up at Hsinching, and in January 1945 the 14th Air Service Group was brought together in the Chanyi area. By December 1944, after a long struggle, CBI Air Service Command strength in China reached almost 5,000 enlisted men and officers. Together with the manpower from Chinese sources for supply and maintenance, this encouraged air force commanders in China to organize, for a second time, an independent air service command: on 12 December 1944 the CBI Air Service Command was divided into two parts, the China Air Service Command and the India-Burma Air Service Command.[47] This move did not relieve the air forces in China of dependence upon fourth echelon repair in India nor upon the gasoline supplies coming through India, but it did provide a measure of self-reliance and flexibility never before attained.

With the war in Burma coming to an end, added service personnel were sent to China. In May 1945 some 8,445 enlisted men and officers engaged in service activities were in the China Theater, just short of the air service strength in India back in September 1943; in the same month, the China Theater received its first and only air depot group, the 301st. In July the 382d Air Service Group (Special) was moved from its Indian bases into the Luliang area, and in September the 381st Air Service Group (Special) followed it to China.[48] These movements were a part of the effort, beginning in the summer of 1945, to push forward into China the main strength of the AAF in CBI.* By that time the Ledo Road had been opened and the India-China airlift had reached totals which exceeded the expectations of Allied leaders in the earlier days of the war,† but all this had come too late to alter materially the record of air operations in China.

It was in Burma rather than in China that CBI forces scored their major victory—a victory that was peculiarly dependent upon the varied services rendered by the Allied air forces. This does not gainsay the role played by ground troops; it simply points out how Allied

* See below, pp. 267–72.
† See below, pp. 257–58.

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commanders, without roads, railways, or other surface routes, were able to carry the battle to the enemy across the jungles. One Japanese officer, writing in his diary on 1 June 1944, showed, in an entry typical of enemy testimony, how his own machine-gun company had been reached:

> Enemy aircraft are over continuously in all weather. We can do nothing but look at them. If we only had air power! Even one or two planes would be something. Superiority in the air is the decisive factor in victory. . . . But only with economic and manpower resources, can one have superior air power.

Behind the air victory in Burma and behind the magnificent effort of American airmen in China, there lay the longest supply line in military history. The credit for putting aircraft, gasoline, bombs, and ammunition into the hands of operational commanders rested in no small way with the service personnel who, without much glory, worked in shops, supply rooms, and at desks.

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CHAPTER 7

* * * * * * * * * * *

DELAY IN BURMA, DISASTER IN CHINA

WHEN the B-29's launched their offensive against Japan midway in 1944, the military situation along the widely separated fronts of the China-Burma-India theater was anything but hopeful. In April the Japanese had inaugurated a general offensive in northeast China which by summer threatened to overrun all Allied airfields east of Kunming, with most disastrous consequences to the Allied cause in China. In May Stilwell's offensive in Burma had been halted just short of Myitkyina.* Though his combined American and Chinese forces had seized the nearby airfield, the town itself remained under enemy control and was reduced only after a three-month siege. The Burma bulge, which since 1942 had served the enemy's purpose of cutting off ground communications between China and her allies, still remained a bar to all save the most expensive and hazardous of air communications.

It was perhaps inevitable that long-standing conflicts of personality and policy, which had formed so large a part of the previous history of CBI,† should now make difficult united action even in the face of grave emergency. Lt. Gen. Joseph W. Stilwell, who combined the command of all U.S. forces in CBI with the duties of chief of staff to Chiang Kai-shek in the latter's capacity as the Allied Commander in China,‡ was dedicated to the proposition that China could be saved only by reopening a land route of supply through Burma. Accordingly, since the preceding December when he had taken active command of the Chinese and American forces in their advance southward from Ledo toward Myitkyina, he had been absent both from his head-

* See Vol. IV, 498–517.
† See especially Vol. IV, 435–43.
‡ Actually, no such staff was ever established.

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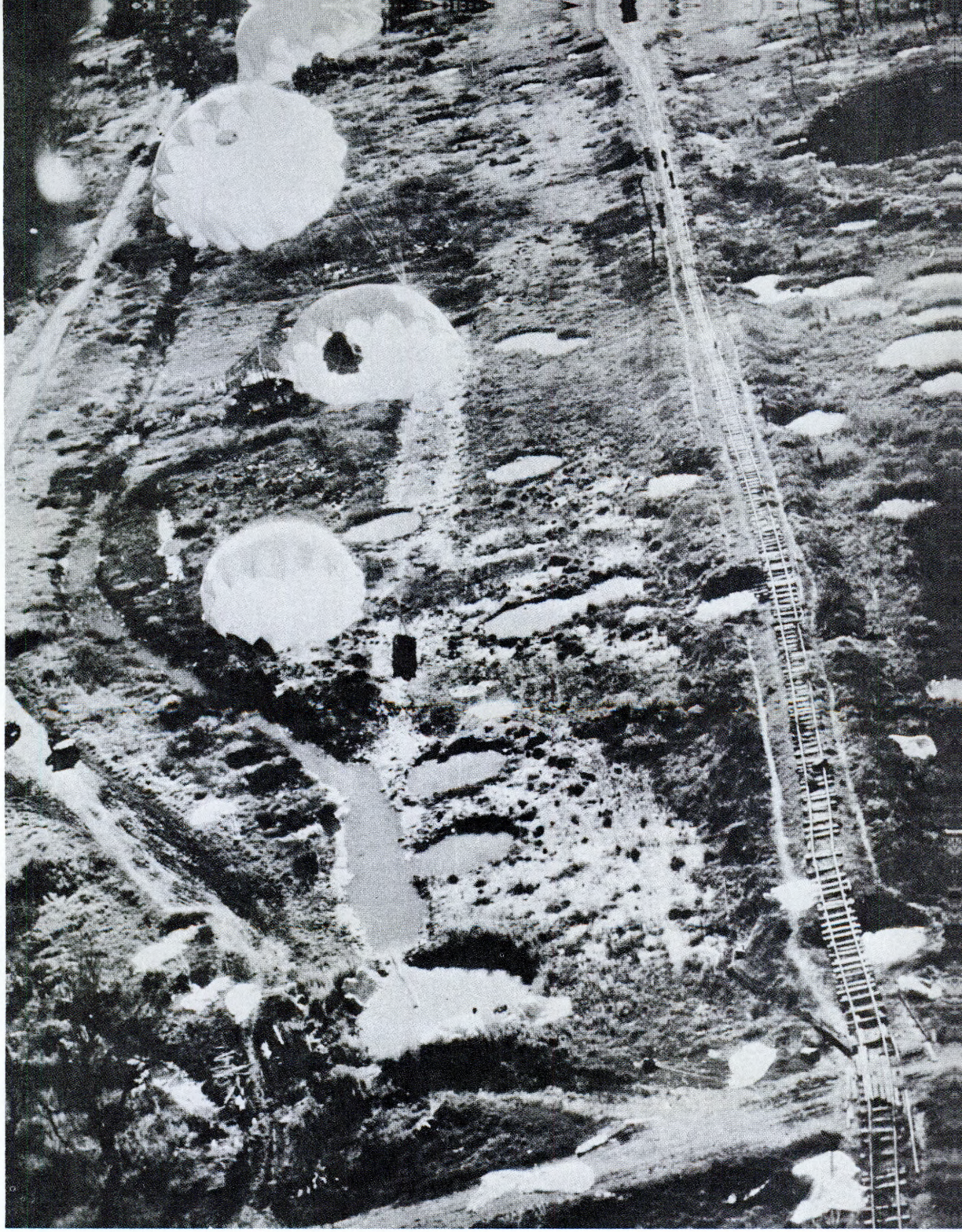
BOMB DAMAGE AT MYITKYINA



AIR SUPPLY

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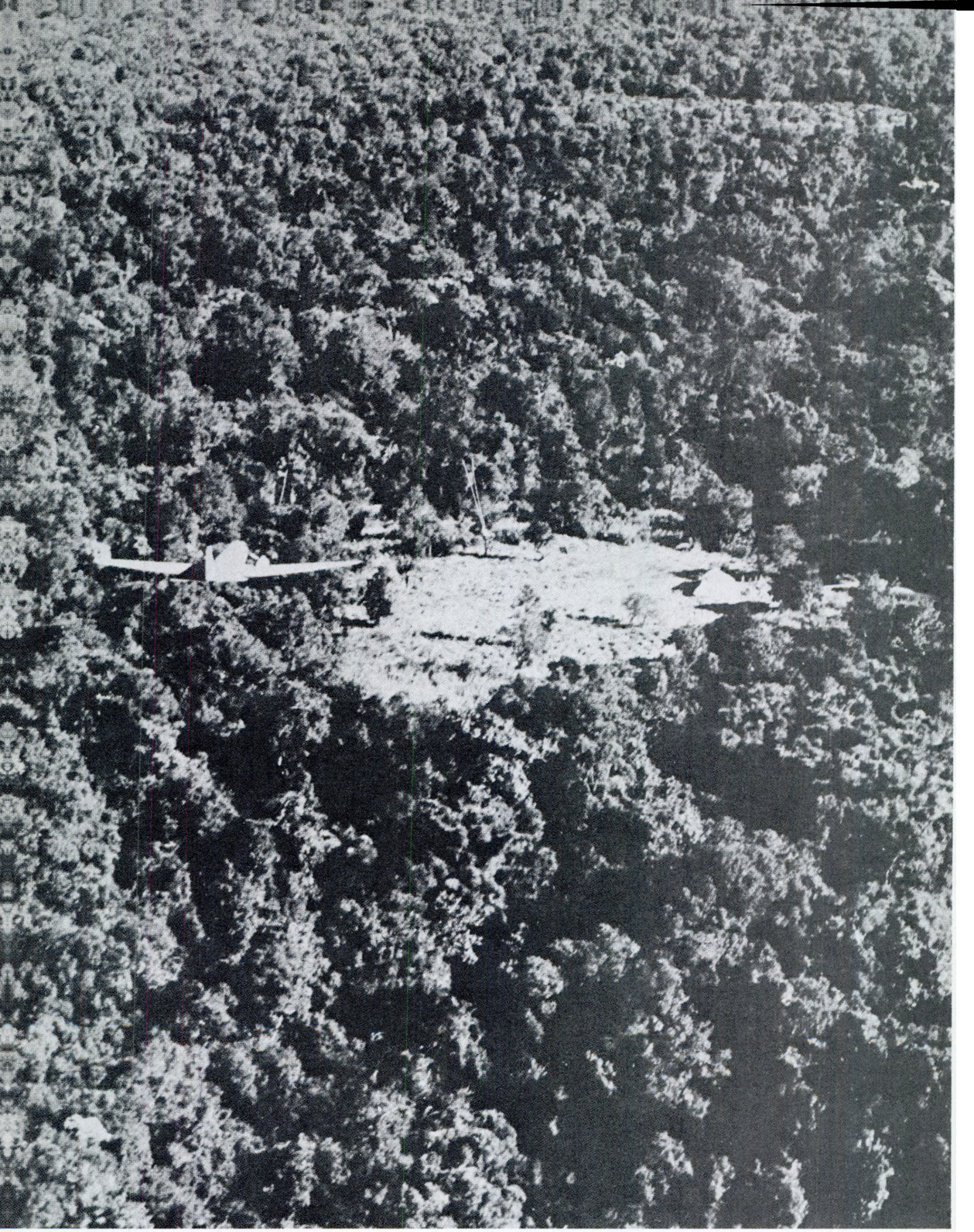

IN BURMA

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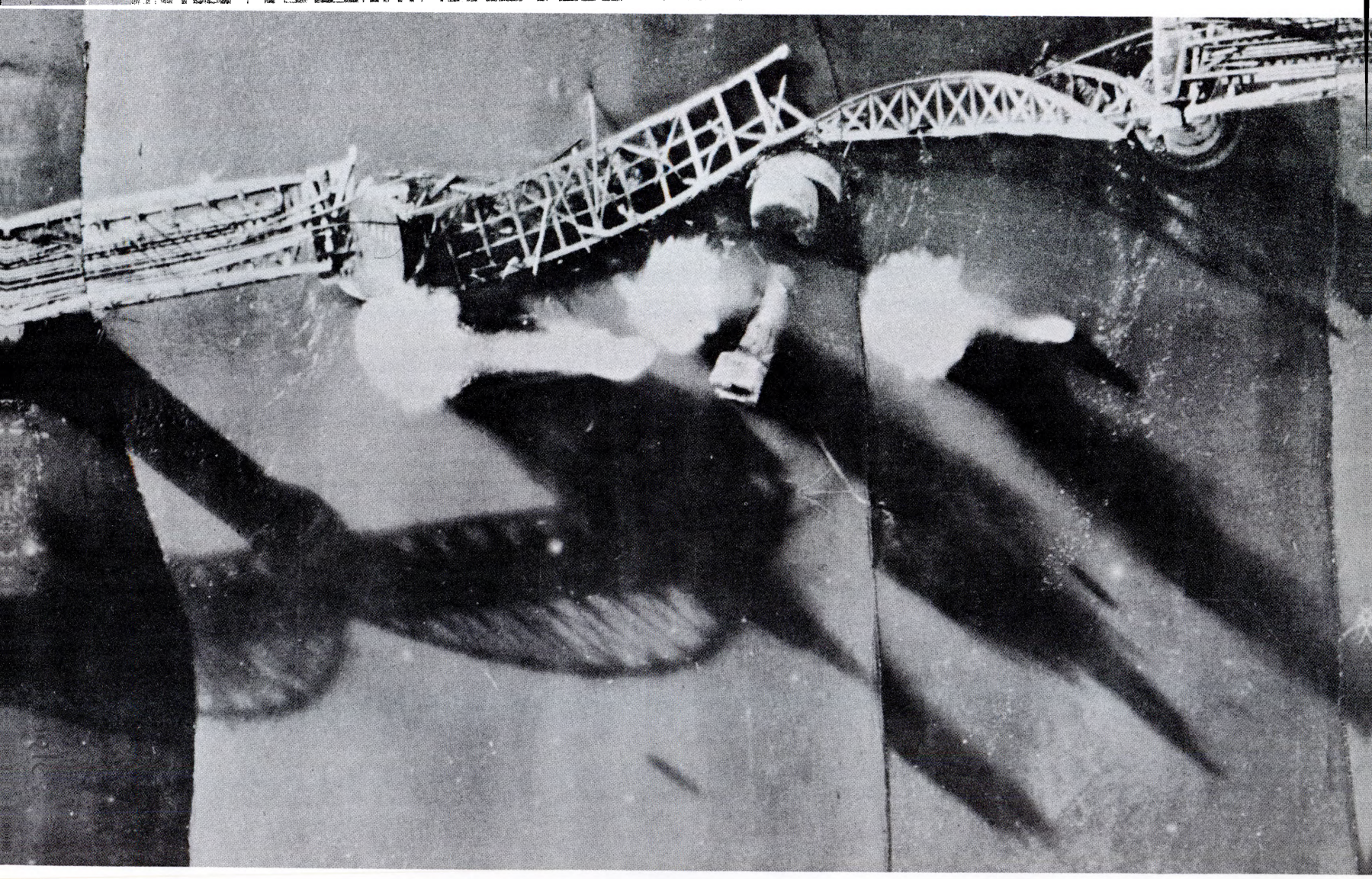

RAIL BRIDGE IN BURMA DESTROYED BY THE 7TH BOMBARDMENT GROUP

quarters at Delhi and from the advanced echelon of that headquarters at Chungking. At heart a field soldier, Stilwell at times seems to have forgotten that his assignment was basically diplomatic and that logistics and actual combat strength largely restricted operations in his theater to very limited air power. For Chiang, Stilwell had developed, as his published papers amply demonstrate,[1] an outspoken contempt. Although he had unqualified confidence in the Chinese soldier, if properly trained and equipped, he doubted the willingness of the Chinese government to fight. Stilwell was also suspicious of Chennault, who had the full confidence of Chiang and thereby enjoyed a direct line of communication with the White House.

General Chennault, in turn, had no faith in the Ledo Road as a means of saving China. He long had argued that available resources should be concentrated on the build-up of the Fourteenth Air Force, which, in his view, could strike effectively against the extended enemy positions along the China coast and, at the same time, against Japanese communications in the South China Sea. The rapidly accelerating drives of MacArthur in the southwest Pacific and of Nimitz across the central Pacific lent new support to Chennault's argument, at least to the extent of re-emphasizing the importance of China-based air operations. Moreover, American success in the Pacific strengthened the belief that even the most expeditious completion of the Ledo Road would come too late to assist the Allies in defeating Japan.

By the spring of 1944 it had been determined that Nimitz, following his occupation of the Marianas, would move into the Palaus on or about 15 September, and that MacArthur, whose New Guinea operations should be completed by the close of July, would land on Mindanao in mid-November with plans either for a jump to Luzon, 15 February 1945, or for support of Nimitz in the occupation of Formosa.* Whether the final decision favored reoccupation of Luzon or the seizure of Formosa, the need for supporting operations over the South China Sea by the Fourteenth Air Force remained unaffected. Likewise, the acceleration of Pacific operations, together with plans for bringing large B-29 forces within effective range of the Japanese islands, promised an earlier and perhaps more direct approach to Japan than at first had been considered feasible. By the summer of 1944, the possibility that China might be wholly bypassed in a direct attack on

* For full discussion of this and subsequent developments in Pacific strategy, see below, pp. 275–88, 390–92.

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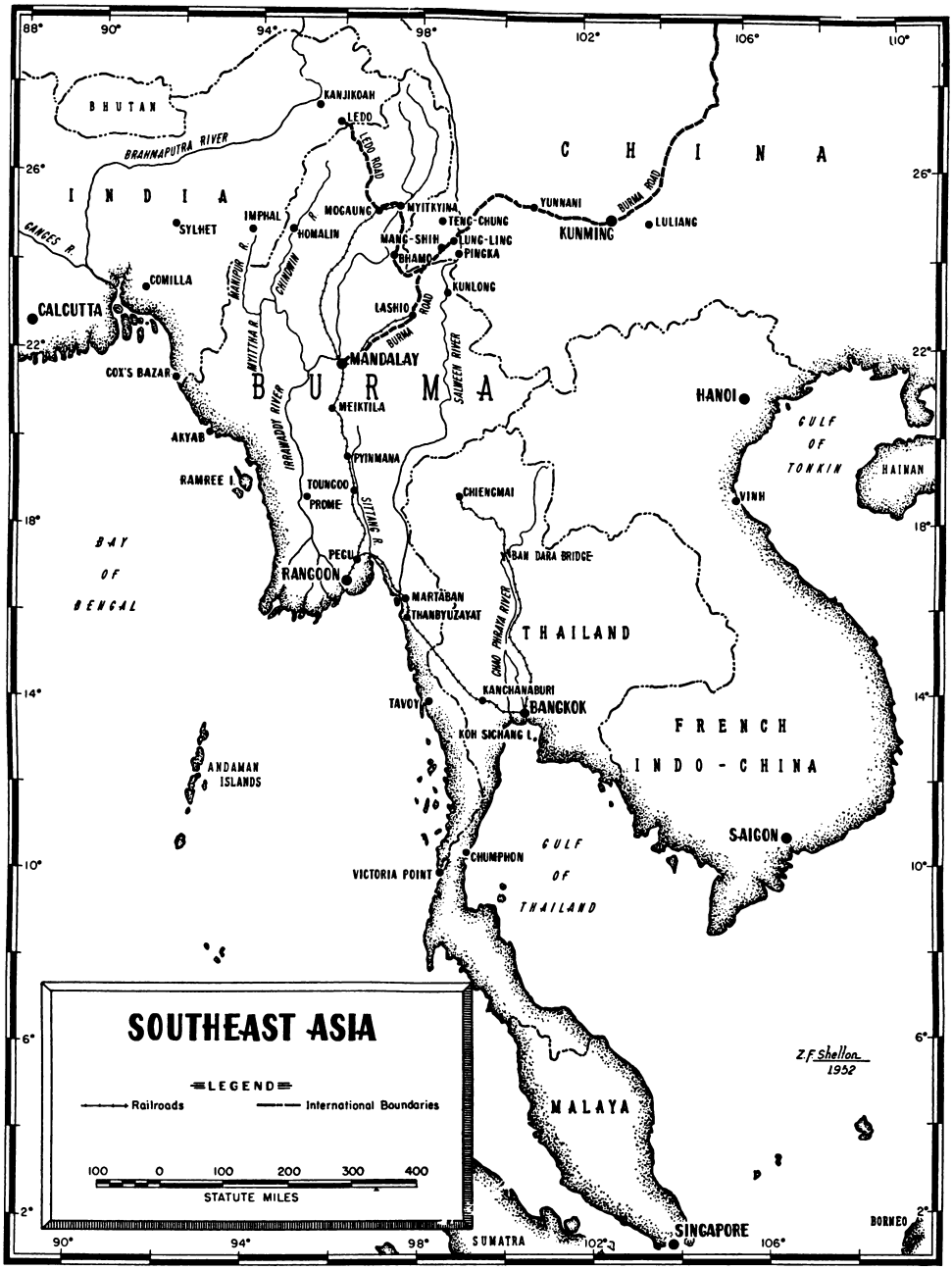

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Japan itself had been discussed,* but the chance that some lodgment on the China coast might be needed had not been dismissed.

In February 1944 the JCS had outlined a strategy depending upon a sea approach to Japan with China serving chiefly as a supporting air base,[2] and during March Stratemeyer's staff developed plans to push forward the main weight of AAF forces in CBI for cooperation with Pacific-based moves into Luzon or Formosa. The resulting plan, coded ENTERPRIZE, called for stocking 5,000 tons per month from the Hump airlift through the remainder of 1944 to permit full employment of a force in China which by January 1945 would include thirteen A-26, three P-51, and three P-63 groups.[3] It was specifically stated that the project would enjoy priority over the Ledo Road. Lord Mountbatten, who had been instructed to press for an early clearance of upper Burma with a view to strengthening the air support that would be available for the Luzon or Formosa operations early in 1945,[4] believed that even the earliest possible opening of the Ledo Road would come too late to be of assistance to U.S. forces in the Pacific. He agreed, moreover, with the basic principle that all effort should be concentrated on the immediate end of strengthening the air link with China. His Southeast Asia Command, he felt, could best assist the Pacific advance by seizing Rangoon in order to force a Japanese withdrawal from upper Burma.[5]

Freed from the pressure of an active compaign in upper Burma after reaching Myitkyina, Stilwell sought from Washington on 24 May some clarification of his mission. Complaining that there had been a bewildering succession of plans, proposals, and counterproposals, he requested of Marshall new instructions "in case I am off the beam." Stilwell stated his own view with customary flatness. "I contend," he declared, "that ultimately the Jap Army must be fought on the mainland of Asia." If Marshall held a different view, it would perhaps be proper "to cut our effort here" to support of ATC and "whatever Air Force you consider suitable in China." The original mission of CBI to increase the effectiveness of the Chinese Army was still feasible, but only "when we get on a realistic basis" with Chiang "or whatever passes for authority in China."[6]

General Marshall's reply three days later pointed out that decisions by the Combined Chiefs in the preceding year had assigned to operations in CBI the primary purpose of support for the Pacific forces. He

* See below, p. 276.

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advanced the view that Japan could be defeated without a major campaign against her army on the mainland of Asia. The "paramount mission in the China Theater" was to "support the main effort directed against the enemy by forces in the Pacific." In the future, Stilwell should devote his chief effort "to the Hump lift and its security," in order to develop the maximum effectiveness of the Fourteenth Air Force consistent with "maximum requirements for support of all other activities in China."[7] This directive made it clear that Stilwell's original mission had been modified,[8] although he was still to be prepared "to exploit the development of overland communications to China."[9]

The change in mission, however, had little effect on immediate operations. For the security of the air route to China no less than for the advance of the Ledo Road, a project to which Stilwell continued to be devoted, Myitkyina had to be cleared of enemy forces. So, it was to that task General Stilwell gave his close attention through most of the summer of 1944.

Reorganization of EAC

The Eastern Air Command, which under Stratemeyer's leadership had carried the burden of air operations throughout the 1944 Burma campaign, had been organized in December 1943 as an "integrated" Anglo-American command combining the U.S. Tenth Air Force and the RAF Bengal Command.* This integration reflected Mountbatten's enthusiasm, and to a lesser extent Stratemeyer's, for the highly successful coordination of British and American strength in the Northwest African Air Forces.[10] The complex situation in CBI, however, had presented in practice problems quite different from those of Eisenhower's combined command in the Mediterranean. Consequently, by the summer of 1944 it was agreed that reorganization was necessary.

Indeed, the Americans had accepted the principle of integration in the first instance with reservations, and because at the time it was assumed that all forces would soon concentrate on a major effort to drive the Japanese from Burma in 1944.[11] After decisions at the Tehran conference of late 1943 resulted in withholding resources necessary for a major amphibious venture in Burma, discussions of CBI

* See Vol. IV, 458–59. Under EAC, British and American units were combined in four subordinate commands: a strategic air force, a tactical air force (Third TAF), a troop carrier command, and a photographic reconnaissance force (PRF). The Tenth Air Force and Bengal Command retained their separate entities for purposes of administrative control of their respective units.

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strategy had served to re-emphasize the conflicting interests of the British, the Americans, and the Chinese* and this strengthened doubt among American leaders as to the wisdom of an integrated air command. The British appeared to be interested primarily in the liberation of Singapore, whereas the Americans were chiefly concerned for the support of China. It was perhaps only because the decision in favor of integration already had been widely publicized that the War Department took no action to withdraw from EAC in December 1943.[12] Instead, Washington apparently warned Mountbatten that American commitments to China might require further consideration of integration by the Combined Chiefs of Staff.[13] Thus scarcely had EAC come into existence before one of the partners regretted the decision.[14]

Under these circumstances, it is a tribute to the American and British commanders within SEAC and EAC that integration worked so well.[15] Despite many differences of opinion, patience and understanding at the top set a pattern for all elements of the command.[16] As a result of the common sense shown by both Allies, EAC endured as long as the Japanese remained in Burma, and it was not until Rangoon was occupied in May 1945 that integration was altogether abandoned. Meantime, June 1944 brought adjustments within EAC which represented a partial departure from the original concept.

The change came as part of a general reshuffling at top level. Delhi was crowded, far away from battle fronts, and not even located within the confines of Southeast Asia Command. Admiral Mountbatten therefore moved his headquarters to Kandy on Ceylon, which was at least in his own territory. Stratemeyer transferred EAC to Hastings Mill, twenty miles north of Calcutta on the Hooghly River, where the jute mills provided ample space for offices and quarters. At the same time he directed his staff to study the advisability of dividing the Photographic Reconnaissance Force and splitting the Third Tactical Air Force (TAF) into two task forces, one for operation on the northern part of the Burma front and the other for the south. His proposal suggested assignment of all types of aircraft to both task forces, except that heavy bombers would remain in SAF.[17]

There was little difficulty in reaching agreement within the staff, which itself included both American and British officers, on the need for some reorganization in the interest of a closer coordination of air and ground efforts.[18] Despite Stilwell's practical independence, the British Fourteenth Army was theoretically in command in Burma,

* See Vol. IV, 497.

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but the commander of the Third Tactical Air Force did not have a corresponding responsibility for all units in his immediate area, which extended from Assam to Arakan. The arrangement caused confusion. At a fully attended meeting on 28 April 1944, the EAC staff agreed that the Troop Carrier Command should be disbanded and its units placed under the Third TAF, the latter remaining as constituted at the headquarters level but possibly divided into two or three tactical commands at the operational level. It was also agreed that both the Strategic Air Force and the Photographic Reconnaissance Force should be continued in their existing form, but that every precaution should be taken to safeguard the integrity of the Tenth Air Force.[19] Stratemeyer hastened to begin the work. His first move was to place the Troop Carrier Command (TCC) temporarily under the Third TAF, as of 2 May. The men of TCC, knowing they had done a remarkably fine job, regarded the change as a penalty for making the maximum effort in carrying through a difficult mission,[20] and it took all of Stratemeyer's diplomacy to ease the hurt feelings.[21] A month later, 4 June, Troop Carrier Command was abolished, and its units came under the direct control of the Third TAF.[22]

On 20 June EAC was reorganized into six components: Strategic Air Force, Third Tactical Air Force, Photographic Reconnaissance Force, Tenth Air Force, 293 Wing, and an air task force. The Strategic Air Force, under Air Cdre. Sir Francis Mellersh, remained an integrated organization composed of the AAF 7th Bombardment Group (H) and the RAF 231 Bombardment Group.* The Photographic Reconnaissance Force was composed of 171 Wing and the 87th Photographic Group. Third TAF kept the RAF 221 and 224 Groups, the 12th Bombardment Group (M), and the 3d Combat Cargo Group. The Tenth Air Force, restored as a combat command under Maj. Gen. Howard C. Davidson, had the 80th Fighter Group, the 311th Fighter-Bomber Group, the 443d Troop Carrier Group, and the 11th Combat Cargo Squadron attached, with additional signal, fighter-control, air warning, and antiaircraft units. An air task force, whose responsibilities were not yet defined, consisted only of Air Commando Unit No. 1 and the 3d Combat Cargo Group.†

* The AAF 9th, 436th, 492d, and 493d Squadrons and three RAF wings—175, 184, and 185—were included in SAF. The 292 Squadron, Air Sea Rescue was controlled by 231 Group but was not part of SAF.

† Of these units only the first was in the theater. The other was being set up in the U.S. for CBI, but see below, p. 208n. The task force was never brought into existence.

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With the June reorganization complete, Davidson established his Tenth Air Force Headquarters in the upper Assam valley, a situation favorable to his new operational responsibilities,[23] which included defense of the Assam-Myitkyina area, protection for the air route to China, and the provision of air support and supply for Allied forces still at Myitkyina. In effect, the reorganization kept the central principle of an integrated command over British and American air forces, thus providing assurance of flexible employment of all resources in the event of an emergency, and maintained unified direction for strategic and reconnaissance operations. The units directly engaged in the support of ground forces, however, were operating along national lines. It was a decision justified by many considerations, but like many other decisions in CBI, it did nothing to simplify an already complex command structure.

The Siege of Myitkyina

On 17 May 1944 Stilwell had seemed to have Myitkyina, chief enemy base in northern Burma, within his grasp, but after seizing the airstrip west of the town, his forces failed to take the town itself. The inexperience of some of his troops, the exhaustion and low morale of others, and a misunderstanding in the execution of plans for his reinforcement by air combined to cost Stilwell a great victory.* The enemy, now forewarned, had time to dig in, and Stilwell faced the necessity for a long siege.

Reinforcements were flown in as quickly as possible, and by June the Allied lines were tightening around the strongly entrenched enemy. On the north two battalions of Merrill's Marauders had their left flank on the Irrawaddy and their right flank on the Sumprabum road. The U.S. 209th and 236th Combat Engineer Battalions, recently flown in, were south of the road. The Chinese 30th Division occupied positions west of the town, and the Chinese 50th Division was on the south with lines extending to the Irrawaddy.[24] A small column of the Wingate Force† had worked its way northward along the line of the Irrawaddy to complete the encirclement of Myitkyina by taking up

* See Vol. IV, 516–17.

† Brig. Orde Wingate the preceding year had organized with British imperial troops a long-range penetration force which in March 1944 had been air-landed in the interior of Burma and supported entirely by air in its operations around Indaw. (See Vol. IV, 503–7.) Though Wingate himself had been killed on 25 March, his Special Force continued to be known as the Wingate Force.

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positions east of the city. By 14 June there were as many as 12,000 troops besieging Myitkyina, but their morale was low.[25] The American engineers had no experience in combat, and some of them appeared to lack the most fundamental training in self-defense. The Marauders, whose numbers had been sadly depleted by casualties and sickness, were especially depressed. Not until the fourth week in June could Stilwell report that his forces had "snapped into it."[26] During four critical weeks the Japanese might have counterattacked with success had they not believed that the Allied forces numbered 30,000 men or more.[27]

As the siege began, Stilwell's greatest fear was that air supply, upon which he was highly dependent, might fail to meet his needs. Not only were the daily landings of transport aircraft at the west strip limited through the first days after its capture to twenty-five or less, but clouds above the mountains foretold the early coming of the monsoon. Happily, Stilwell's fears proved to be ill founded. The techniques of air supply had been developed to an amazing point of perfection in CBI, where unusual requirements encouraged a wide variety of experimentation in the whole field of air support for ground operations. The most interesting of the experiments was embodied in Col. Philip G. Cochran's air commando group, a self-sufficient air task force equipped to deliver the Wingate-type of ground force far behind the enemy lines, to keep it supplied, to render tactical air support for its operations, and, if need be, to accomplish its withdrawal. Actually, the main responsibility for air supply during the Burma offensive had fallen to the Troop Carrier Command, and it too had proved to be both ingenious and effective in the execution of its difficult tasks.* By late July as many as 551 planes had landed and taken off from the west strip on a single day, and the supplies delivered by air transport more

* See Vol. IV, 503–7. The early enthusiasm for the air commandos led Washington to overestimate the need for this type of unit in Burma. By summer the AAF was in the process of establishing four special air units shaped by the experience in Burma: two air commando groups (each with two squadrons of twenty-five P-51's, one troop carrier squadron of sixteen C-47's and thirty-two CG-4A gliders, and three liaison squadrons having in each instance thirty-two L-5's and a small complement of UC-64's) and two combat cargo groups (each with four squadrons of twenty-five C-47's—later changed to C-46's). Mountbatten, whose plans emphasized amphibious operations rather than a further development of long-range penetration groups, questioned the need for these special air units in Burma. As a result, the units were divided ultimately with SWPA (see below, pp. 334–35). In EAC on 14 September 1944 the Combat Cargo Task Force, in lieu of the air task force of 20 June (see above, p. 206) was activated to include the 1st Air Commando Group, the 1st Combat Cargo Group, and RAF 177 Transport Wing. Brig. Gen. Frederick W. Evans was its commander.

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than met the need through the preceding two months.[28] The fact that the deliveries were made through the rainy season to a strip only 50 feet wide and 4,200 feet long added greatly to the significance of this achievement.

Equally important in the final victory of Stilwell's troops was the close-in ground support provided by the Tenth Air Force. Though the Myitkyina Task Force Corps Artillery was invaluable to the besieging infantry, its equipment consisted only of two 155-mm., two 105-mm., and eight 75-mm. howitzers,[29] and thus the Tenth Air Force had to supply a substantial deficiency in supporting fire power.

Fortunately, experience provided the necessary organization and effective techniques. When Stilwell first began his advance from Shingbwiyang up the Hukawng Valley in the autumn of 1943, it had been anticipated that heavy demands would be made on the Tenth Air Force for close-in ground support. At that time, the AAF fighter units in Assam consisted of the 80th Fighter Group (three squadrons of P-40's) and the 311th Fighter-Bomber Group (two P-51 squadrons and one squadron of A-36's). Since the personnel of these units had no experience in close support, careful preparations were made for the work ahead. The first move was to establish an air-ground support radio team in the 1st Tactical Communication Squadron to receive all requests for air-ground support, to screen these requests and eliminate those not suitable for air attack, and to convey accepted requirements to air headquarters together with all information necessary for the execution of the mission. Also liaison had to be established with G-2 and G-3 in order to keep air headquarters constantly apprised of the precise positions of friendly and hostile troops.[30]

In the advance toward Myitkyina, it had been agreed at first that troops asking close support would lay out a panel at a specified distance from the target and pointing toward it. When the deep jungle, however, made it difficult to place such a signal and even more difficult for the pilots to spot it, smoke shells were mortared on the target according to a predevised code, so that their bursts formed, for example, a triangle or a rectangle. Still, the signal pattern was frequently blurred by drift or other causes, including diversionary smoke shells fired by the enemy. A third device was the use of coordinates superimposed on special photographs of enemy-held areas. A transparent grid of plastic made it possible to divide any print into twenty-four squares with the usual horizontal and vertical designations by number

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and letter. With copies of the appropriate print in the hands of all interested units and headquarters, air and ground, it required only the specification of the coordinates to pinpoint the desired target.[31] To assure speedy and correct coverage of target areas, as early as November 1943 a detachment of the 9th Photo Reconnaissance Squadron and the 17th Photographic Interpretation Detachment were placed at the disposal of air headquarters. The A-2 division screened requests for coverage, maintained a photographic library, placed orders for anticipatory photographic coverage, and briefed the pilots for missions.[32] The highest efficiency in close support was achieved by combining the use of coordinates with ground-controlled radio guidance. With both the target and friendly troops located by grid, the pilot reached his destination at a prearranged time and contacted by radio the ground-air liaison party. A dry run over the target provided a further check, so that errors in flight could be detected and corrected before the actual bombing was undertaken.[33]

The system worked. The most elaborately hidden Japanese artillery positions, dug-in machine guns, slit trenches, road blocks, or troop concentrations were hunted and destroyed. Errors became increasingly few and a spirit of camaraderie seldom met with elsewhere grew up between the ground and air personnel.[34] The airmen did not strike with that detachment which so often marked the activities of bomber crews operating from an altitude that made the target an impersonal object far below.

By May 1944 air strips had been built along the Hukawng and Mogaung valleys that were suitable for use by fighters and transports. The 88th Fighter Squadron, equipped with P-40's, was based at Shingbwiyang; the 528th Fighter Squadron, with both A-36's and P-51's, was located at Tingkawk Sakan, as was also a flight of P-40's of the 20th Tactical Reconnaissance Squadron. In Assam there were two more squadrons of P-40's and two of P-51's.[35]

As the siege of Myitkyina began, it was decided to base a flight of eight P-40's on the newly captured west strip in order to assure the immediate availability of a few planes for supporting operations. These planes—the number was later raised to twelve—operated from a base that was probably closer to enemy lines than ever before in the history of aerial warfare, for Japanese machine guns were only 1,000 yards away and fired on the aircraft at every take-off and landing. Although the first line of the hostile emplacements was soon destroyed by dive-

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bombing attacks, there were other machine guns a short distance to the rear which were a constant threat.[36] A detachment of three P-40's of the 20th Tactical Reconnaissance Squadron was also ordered to Myitkyina, along with a small field laboratory, which could produce required prints of target areas with a minimum loss of time.

In the weeks that followed the opening of the siege, the planes stationed on the Myitkyina strip carried through most of the missions directed against the town and its immediate defenses. The pilots became so proficient that they were called upon even when friendly troops were within seventy-five yards of the target. Other planes were called in from Tingkawk Sakan, Shingbwiyang, and the Assam fields for less exacting performance. Since most of these were naturally not as familiar with the sector as those based on the west strip, they depended on radio direction for locating the target. They normally did not land at Myitkyina, but made their approaches over the strip for any last-minute instructions from the local ground-air liaison station.[37]

The intensity of the supporting effort at Myitkyina was in itself remarkable. There were days when pilots flew as many as six missions each, and it was by no means unusual for a flight of four planes to accomplish twenty sorties within twenty-four hours. In all, the fighters ran a total of 2,515 sorties between 17 May when the siege began and 3 August when the city fell. That was an average of thirty-three sorties per day, and it was accomplished during the rainy monsoon, when there were many hours in which weather prohibited flying. Consequently, every possible advantage had to be taken of even the briefest breaks in the rain and clouds, which meant that a disproportionate burden of close support had to be carried by aircraft based on the strip. All too frequently clearing weather gave way again to rain and low ceilings before fighters from Tingkawk Sakan, though only twenty minutes away, could reach the targets.[38]

In performing their mission, the fighter pilots developed their own technique of dive bombing in order to keep the bomb strike within fifteen yards of the target. Using a 45° angle of dive, usually begun at 5,000 feet with pull-out at 1,000 feet, and sighting between the second and third wing guns, they could detect the slightest deviation. On most of the missions the bombs were 250-pounders, fuzed for one-tenth of a second delay to permit penetration and narrow the area of the explosion.[39]

Meanwhile, the troops of the Ledo forces were daily moving closer

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to the center of Myitkyina. The Japanese were slowly edged toward the river, on the other side of which the British were advancing. By 1 August it was evident that the end was near and Burmese civilians, allowed to escape by the Japanese, came over to the American and Chinese lines. On 3 August the investing armies moved forward all along the line, with the exception of the Chinese 30th Division. The fighting was heavy in the morning, but lessened with the passing hours. By midafternoon the city was completely occupied,[40] but many of its original defenders had escaped.

Simultaneously with the siege of Myitkyina, columns of the Wingate Force moved in from the south, and Chinese forces came from the north to join hands in a siege of Mogaung—an important town, some thirty miles southwest of Myitkyina, lying astride the railroad and the roadway leading from the Irrawaddy valley to the Hukawng and Mogaung valleys. The town was captured early in July, with the aid of 423 supporting air sorties.[41] Following the capture of Mogaung, the British 36 Division drove the enemy south along the Burma railroad, the mobile warfare making impossible the contact between troop commanders and supporting pilots which obtained at Myitkyina. If the problems were more difficult, however, they were also more representative, and the system employed had further use as the Allied troops advanced south into Burma during the remaining months of 1944 and the first five months of 1945.

Each brigade of the British 36 Division was divided into two columns. The 72 Brigade sent one column south along the railroad and the other south along the roadway, with brigade headquarters advancing behind the columns at a distance of one to five miles. The problem before the Tenth Air Force was to supply adequate close support without constantly maintaining fighters over the moving columns. To meet the situation, the Tenth Air Force installed a tactical communications network within the brigade: each column was furnished with a voice radio and a four-man team, the latter consisting of an air officer and three enlisted airmen; brigade headquarters was supplied with a radio for voice communication and another radio for point-to-point transmissions, together with the necessary operating personnel. When the column commander desired close support, he called the chief of the radio team and specified the location of the enemy strongpoint by using gridded mosaics. The chief of the radio team then called brigade headquarters by voice to describe the support requested. The brigade

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commander, assisted by an air force representative, decided whether the request could be honored, and Forward Echelon Tenth Air Force at Shaduzup was requested in the clear to send a definite number of fighters to the specified coordinates with a specified bomb load. Tenth Air Force dispatched the aircraft and supplied brigade headquarters with the estimated time over the target. As at Myitkyina and Mogaung, the liaison between air and ground was consistently so close during the course of attack that the air force was able to hit a pinpoint target at the front lines within forty minutes after the initial request, using aircraft based fifty miles to the rear.[42]

After 3 August victorious troops from Myitkyina joined those advancing south of Mogaung. A week later, Taungni fell and the Allied ground forces prepared to establish a defensive position along the Taungni-Kazu line, less than twenty miles south of Mogaung. The Tenth Air Force, disturbed by the decision to halt the advance so near the city of Myitkyina and its airfields,[43] argued that the front line should be at least seventy miles from the city—that is, the Katha-Bhamo line—to guarantee proper air warnings. Supporting this view was the apparent fatigue of the Japanese troops and the demonstrated ability of the Tenth Air Force to maintain both supply and tactical support despite the weather. Nevertheless, Stilwell felt that his troops were in need of rest and reorganization, and halted his advance about 10 August some twenty miles below Mogaung. There his armies stayed until the resumption of the offensive in mid-October 1944.

The decision by Stilwell to halt his advance on the Taungni-Kazu line was a bitter disappointment to Chiang Kai-shek. The latter had been persuaded, very much against his will, to commit his Yunnan Force of 50,000 combat troops, commanded by Brig. Gen. Frank Dorn, to the Burma campaign in May when there was every reason to believe that Myitkyina would fall without trouble and that contact would be established soon after between the X Force advancing from Ledo and the Y Force advancing from the Salween valley. Participation in the Burma campaign involved not only the Yunnan ground forces but also the Fourteenth Air Force which was expected to play the same role in the battle along the Chinese frontier which the Tenth Air Force performed around Myitkyina and Mogaung.[44] Specifically, the Fourteenth was called upon to perform the following functions: 1) air supply of food and ordnance to Chinese units at advanced points; 2) close tactical air support by bombing and strafing targets of

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immediate tactical importance; and 3) destruction of enemy lines of supply in an effort to isolate the battlefields. It is evident that the Salween campaign thus demanded the employment of important units of the Chinese armies and the Fourteenth Air Force, and it so happened that the campaign got under way at the very time when the need became critical for these same forces in east China.

In preparing for the campaign, a forward echelon of the 69th Composite Wing was set up on 2 May with Maj. A. B. Black in command.[45] Air support for the Chinese armies was assigned to the 25th Fighter Squadron and the 22d Bombardment Squadron (M). In addition, there were the B-24's of the 308th Bombardment Group which were employed to bomb certain targets—principally Lung-ling, Tengchung, Wanting, and Lashio—on shuttle trips between China and India. Also, the 27th Troop Carrier Squadron from EAC was attached on 21 May to the 69th Wing for the purpose of supplying the Chinese armies, otherwise effectively cut off by lack of bridges and roads as soon as they crossed the Salween and began to move against the almost impregnable Japanese positions on the east bank.*

It was always realized, of course, that the Y Force alone, advancing against the powerful Japanese positions east of the Salween, could accomplish nothing. The point of the campaign was to take Tengchung, Lung-ling, Mang-shih, and Pingka in a pincer movement with the X Force, but the wisdom of committing the Y Force was made questionable by the long siege at Myitkyina. During the summer of 1944, the Y Force fought doggedly and had little to show for its efforts except dead and wounded. The Generalissimo, therefore, felt that his worst fears were justified when victory was held up from

* The extent of air operations devoted to the Salween campaign during the summer of 1944 is shown by the following table:

	14 C-47's of Troop Carrier Squadron		*30 Fighter Aircraft*	*19 B-25's*
Month (1944)	*Sorties*	*Tons Dropped or Landed*	*Sorties*	*Sorties*
May	—	—	481	144
June	—	—	300 approx.	100 approx.
July	376	711	222	120
Aug.	613	1,378	640	142
Sept.	601	1,225	419	118
Oct.	765	1,739	357	39
Nov.	962	2,075	908	185

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17 May until 3 August, and he became very impatient with Stilwell when the latter decided to halt his advance on 10 August a short distance from Mogaung. From the Chinese point of view, the Salween campaign was a waste of men and materiel from the moment that Stilwell failed to take Myitkyina until 15 October when the advance on Bhamo was resumed. The Y Force did not win its first outstanding success until 14 September when Teng-chung fell.

*Loss of the Kaifeng-Hanoi Axis**

Long before Myitkyina fell to Stilwell's besieging forces, the Japanese Army was well advanced toward the completion of its conquest of the Hengyang-Kweilin-Nanning corridor. Though the Japanese had been content until 1944 to occupy only such points along the Chinese coast south of Shanghai as were necessary to close off sea communications, they now clearly intended to cut through eastern China a land axis joining the northern and southern portions of their empire. In addition to getting interior lines of communication, they also hoped to overrun the more important Allied airfields which posed an additional threat to their sea communications just when U.S. Pacific forces menaced them from the east. Moreover, it was hoped China might be completely knocked out of the war before U.S. forces were in position to make effective use of the Asiatic mainland either as an air or as a staging base in an assault on Japan.

The Japanese offensive had opened 17 April in a move from across the Yellow River at Kaifeng down the railway leading to the Yangtze. Contact was made with the Japanese forces at Hankow a month later. After a slight pause the offensive was renewed on 26 May in a widening drive southward from the line of the Yangtze toward Changsha on the Hsiang River. This drive, which left little doubt as to the serious implications of enemy plans, forced the Chinese armies to fight on widely scattered fronts. Two American-trained divisions, the 30th and 50th, were committed to the newly inaugurated siege of Myitkyina; on 11 May the Yunnan Force (the Chinese 87th and 88th Divisions) launched their own offensive into Burma across the Salween

* It is customary to speak of the "loss of the east China airfields" as though they all fell to the enemy in one catastrophe. That is incorrect. Between April and December 1944, the Japanese pushed through their Kaifeng-Hanoi axis, and took the airfields along the Hankow-Nanning railway. Then, in January and February 1945, the enemy occupied the remaining east China airfields between the Hsiang River and the coast.

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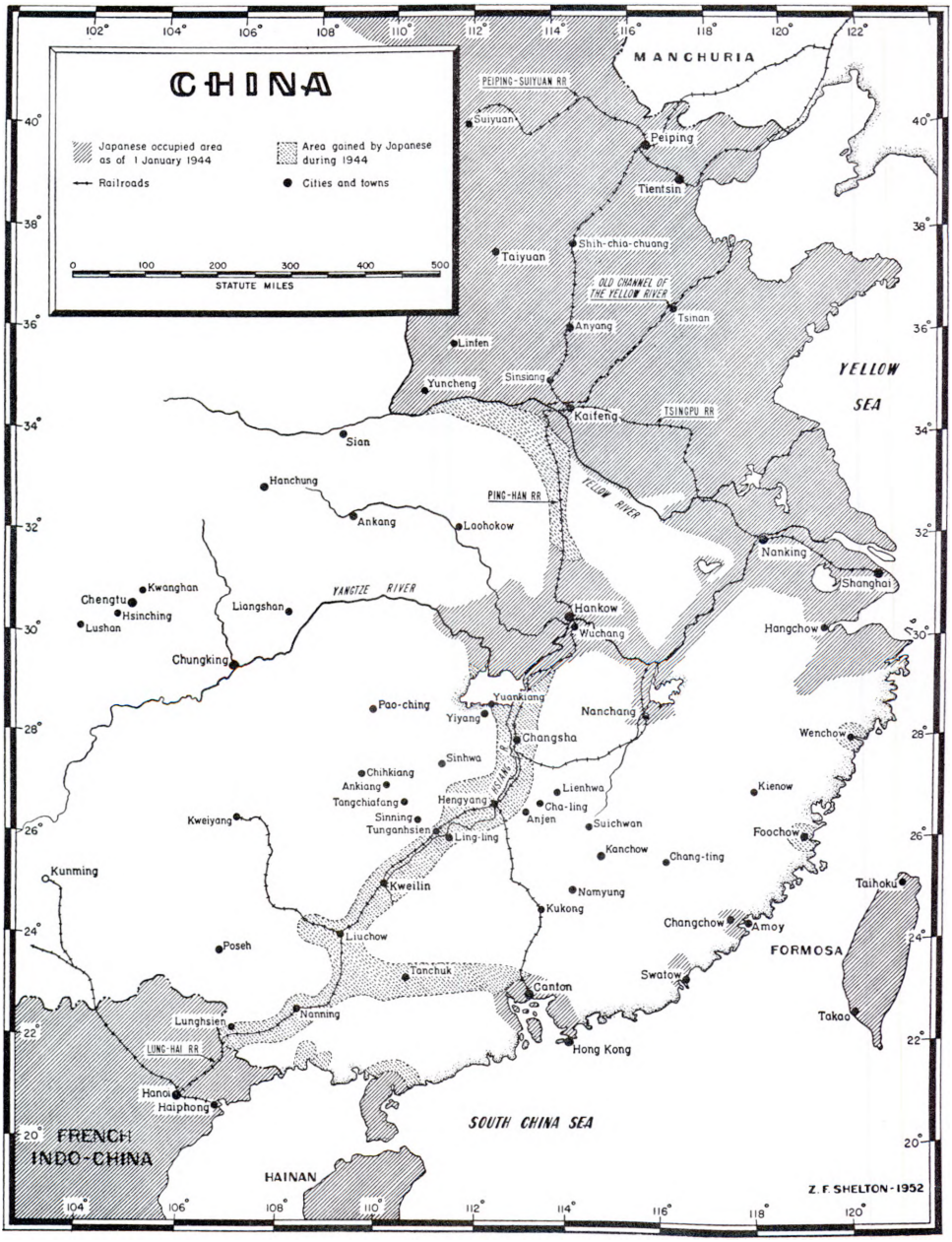

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River to support Stilwell's attempt to clear the enemy from upper Burma. In eastern China, Marshal Hsueh Yo* undertook to stem the enemy drive with a force of about 150,000 men of the regular Chinese Army, none of the units having benefited by the special training program undertaken by General Stilwell, and all of them sadly deficient in modern equipment. The Japanese had committed to the new offensive approximately a quarter of a million men, although not more than 60,000 were front-line combat troops. Their greatly superior equipment and training gave them a decided advantage over their opponents, and fighters and dive bombers, apparently drawn from Formosa, supported the advancing ground units.

Chinese hopes of stalling the enemy offensive depended heavily upon the assistance Chennault could provide. He had taken the precaution early in April of ordering to forward bases four fighter squadrons and one medium bombardment squadron of the Chinese-American Composite Wing (CACW).† Although delays in the completion of this movement left the Japanese free of interference from the air in the initial stage of their advance, B-24's of the 308th Group and P-51's of the 23d Group had been moved up to the Chengtu bases in time to strike the first blows on 25 April. By May the CACW units were also in the fight.

Chennault had now achieved his long cherished hope for an air force of 500 planes, of which approximately 400 were in operational condition. Instead of the envisioned air offensive against Japanese communications along the China coast, however, he found himself almost completely committed to defensive operations under most stringent logistical limitations. The 25th Fighter Squadron, the 22d Bombardment Squadron (M), and the 27th Troop Carrier Squadron were tied down by combat along the Salween, and a substantial part of the Fourteenth's recently acquired strength had been provided for the specific purpose of defending the B-29 bases in Chengtu. The 33d and 81st Fighter Groups of the newly organized 312th Wing were still in the process of going northward to their new bases,‡ a movement not completed until July.

For support of the hard pressed Chinese Army, Chennault had the P-51's of the veteran 23d Fighter Group, the B-24's of the 308th Bom-

* Commander of the 9th War Zone. His name is sometimes written as Hsueh Yueh.
† See Vol. IV, 530, 541–43.
‡ For details, see above, pp. 80–81.

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bardment Group, the B-25's of the 11th and 491st Bombardment Squadrons, the aircraft of the 118th Tactical Reconnaissance Squadron, and, as elements of the CACW, the 5th Fighter Group (P-40's) and the 3d and 4th Bombardment Squadrons (B-25's). These units were organized as a special task force under the command of Col. Clinton D. Vincent, who also was given operational control of the 322d Troop Carrier Squadron and the 21st Photographic Squadron. Instructions given Vincent on 1 June 1944 assigned the following target priorities: first, enemy airborne aircraft to deplete Japanese air power; second, shipping on rivers and lakes in the Hankow region to interdict his communications; and third, troop columns, trains, camps, motor vehicles, bridges, and river crossings to impede his movements.[46] Strikes against all other types of targets, however inviting, were forbidden in order to conserve fuel for the most vital tasks.

Although not all of Vincent's units were in condition to fight at full strength, a shortage of supply rather than of planes proved to be the critical factor. In the attempt to build up the minimum stockpile required to permit the inauguration on schedule of operations by XX Bomber Command, the Fourteenth Air Force had suffered, especially in the month of March, a reduction in its Hump tonnage.* As a result, fuel reserves were low, and on eastern bases, which were a month's distance from Kunming by the land lines of communications normally employed in China, the shortage of fuel was particularly acute. Chennault had vigorously protested the priority given to MATTERHORN and warned Stilwell in a message on 31 March that the fate of China itself might be at stake.[47] Stilwell advised cutting back operations as much as necessary to build up reserves for an emergency.[48] On 8 April Chennault substituted for the usual radio message a full letter to Stilwell,[49] which the latter seems to have interpreted as a warning chiefly that the Fourteenth could not defend Chengtu.[50] Just after the inauguration of the Japanese offensive, Chennault advised Stilwell that the defense of Chengtu would be "child's play" in comparison with "the more difficult problems of the moment," to which Stilwell countered with an expression of his pleasure in knowing that "the defense of Chengtu is child's play."[51]

Whatever tone Stilwell intended to convey, the remark was unfortunate in itself and symptomatic of the lack of sympathy and understanding between the two commanders at this critical point. Stilwell

* See above, pp. 83–85.

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seems not to have been willing to accept Chennault's word as evidence of the impending danger, and Chennault perhaps now paid a penalty for the vigor with which he had previously pushed the claims of the Fourteenth Air Force and of China in competition with other interests embraced by CBI. On 15 May Chennault complained to CBI headquarters that G-2 had been "unduly cautious and conservative" in its reports to the War Department on the Kaifeng offensive.[52] On 1 June, six days after the major enemy offensive had been launched from the Yangtze toward Changsha, Chennault reported to Stilwell an estimated doubling of enemy troops in the Canton–Hong Kong area and heavy reinforcements in Indo-China, asking immediate assistance toward solving low stock levels in eastern China.[53] Although the Fourteenth Air Force share in Hump deliveries for both April and May had been above 6,000 tons,* Chennault warned Stilwell that the defense of east China would require at least 10,000 tons. Admitting that this would mean conversion of existing XX Bomber Command stockpiles and air supply facilities to support of the Fourteenth, he insisted there was no alternative because the whole effort in CBI was at stake.[54] He got the 10,000 tons, and more, in June but not before Stilwell had asked for Mountbatten's "opinion on a Jap move south from Hankow and/or north from Canton?" Had the move started? Was it imminent? If so, when was it expected? "Or is this just a cover for an attack on Kunming from Indo-China?"[55]

With the renewal of the Japanese offensive on 26 May, Chiang Kai-shek requested Stilwell to return to Chungking for a conference.[56] It had been six months since Stilwell visited China, but he replied that the situation at the front made a trip impossible. Chiang could radio "what is wanted," or he could "send a representative to see me."[57] On Chennault's advice the Generalissimo on 31 May appealed to President Roosevelt in an aide-mémoire, requesting that the reserve fuel, aircraft, and parts at Chengtu be turned over to the Fourteenth Air Force and that further assistance be provided for the strengthening of the Chinese Air Force and for increase of the fire power of Chinese ground forces.[58] In the War Department there was some inclination to discount Chiang's estimate of the situation.[59]

General Stilwell, however, whether persuaded by intelligence received from SEAC or by other influences, now recognized the danger, at least in part. A message of 4 June from Brig. Gen. Haydon L.

* See table below, p. 220.

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Boatner, commander of Northern Combat Area Command (NCAC), urging diversion of planes and supplies from other air projects for a defense of the eastern airfields, has scribbled across it this penciled notation: "Tell him not to worry. We are taking suitable measures. JWS."[60] The reference, presumably, was to Stilwell's action that day diverting for the use of the Fourteenth Air Force 1,500 tons of ATC Hump lift previously allotted to MATTERHORN for the month of June.[61] The Generalissimo having again summoned him to Chungking,[62] on 5 June Stilwell left Burma for China. Stilwell's presence in Chungking served to eliminate some of the difficulties occasioned by wide separation, and for the remainder of the year the Fourteenth Air Force received relatively high tonnage, even though the Joint Chiefs of Staff refused Chiang's request for VLR stockage and continued with plans for B-29 operations from Chengtu.* The statistics for CBI are often conflicting and uncertain, but the following table based on ATC records[63] serves well enough to reveal the improved position of the Fourteenth Air Force among the consignees for Hump tonnage in 1944:

	Total	*14th AF*	*XX BC*	*Other U.S.*	*Chinese*
January	13,399	7,601		1,177	4,621
February	12,920	7,017	383	1,640	3,880
March	9,587	4,379	3,603	940	665
April	11,555	6,757	1,693	1,772	1,333
May	11,383	6,231	1,532	1,826	1,794
June	15,845	12,537	350	1,033	1,925
July	18,975	13,213	1,070	2,664	2,028
August	23,676	13,871	3,055	3,919	2,831
September	22,315	13,245	3,452	2,686	2,932
October	24,715	13,014	7,037	2,557	2,107
November	34,914	14,476	7,881	9,018	3,539
December	31,935	12,805	4,348	13,188	1,594

This increase in allocations did not solve Chennault's problem, for the extra fuel was not given in time to meet the crisis. Deliveries made at Kunming in June could not begin to reach the combat areas for thirty days or more. True, there were set up on paper, lines of air transportation branching out from Kunming to Chengtu, Liangshan, Chihkiang, Ling-ling, Kweilin, and Liuchow, but the Fourteenth Air Force had neither sufficient transports nor, indeed, sufficient gas to fly what transports were available.[64] The experience of XX Bomber Command amply demonstrated that this more expeditious mode of delivery

* For discussion of details, see above, p. 87.

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offered only limited assistance.* The alternative was a tedious trip across precarious roads or inadequate railways, which resulted in at least a month's delay between the unloading of supplies at Kunming and their delivery in east China. In the absence of a previously stocked reserve in east China, Vincent's forces continued to operate under serious limitations, so serious in fact as to make it doubtful that a larger force could have been effectively employed.

Vincent's task was an unenviable one. Even under the most favorable circumstances of supply, his only hope of stopping a determined drive by a large and well-equipped army lay in the possibility that effective air support might fortify the morale of the Chinese armies enough to overcome the many disadvantages under which they fought. The enemy moved southward on a broad front, bypassed fixed defensive positions, and employed tactics of dispersal that cut down the effect of Vincent's attacks. Japanese planes rarely accepted combat, but they continued to find opportunity to assist the advancing ground forces. Vincent's directive did not provide for operations against enemy planes on the ground, and second-priority targets—communications in the region of Hankow—tended to acquire in fact first priority.

Hankow itself, the vital center of the Japanese offensive, was an inviting target. Fourteenth Air Force leaders hoped that General Wolfe's B-29's might be used against that city,[65] but Arnold, though insisting upon a speed-up of their first strike at Japan,† consistently refused to consider any diversion from the strategic mission of XX Bomber Command. In any event, the aid that could have been provided would have been limited, for the B-29's also operated under logistical limitations. Vincent definitely lacked the resources to undertake any massive assault. His bombers, both heavy and medium, struck repeatedly at selected targets in Hankow during early June, but the heavier consumption of fuel by the bombers restricted their use at any distance from their bases. Indeed, before the month was gone, the shortage of fuel forced Vincent temporarily to withdraw his bombers even from short-range attacks on the enemy front.[66]

Almost from the first, the burden fell chiefly on the fighter planes. During the first two weeks of June the P-40's based at Hengyang av-

* See above, pp. 85–87.
† See above, p. 112.

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eraged three or four sorties per plane each day—a rate of operation destructive to both planes and pilots.[67] In cooperation with the Chinese troops along the Yangtze, Vincent sent his planes out day after day to strafe and bomb the Japanese columns. Although the Americans caused small pools of havoc wherever they struck, nowhere did the Chinese infantry prove capable of capitalizing upon this assistance to the extent of accomplishing any major halt in the enemy's advance. Even the bad weather which came early in June did not reduce the pace of air operations. The Fourteenth Air Force history[68] records "strafing and dive bombing missions through such foul weather that the Mustangs had to level-bomb from under hundred foot ceilings" because "they could not get enough altitude under the soup to dive-bomb." Operations and operating conditions are further described as follows:

> Forays against cavalry and bombing of supply dumps were alternated with sweeps up the Siang Siang River and across Tungting Lake to catch the supply fleets. Mechanics worked all night in the steamy heat to repair damage from missions, replace worn parts, and have a full complement of planes ready for a dawn take off. As fast as the planes returned from combat, armorers hung new loads of demolition and frag bombs under the wings and reloaded the guns. On many a mission pilots barely had time to dash to the alert shack, report on the mission, and be briefed on the next target before they were back in their cockpits on a new mission. As a result of the dissolving of the radio net, there was little weather information available, and they flew their own weather recons at dawn every day.

These efforts were indeed heroic, but pitifully inadequate to halt the march of the victorious Japanese. Changsha fell on 18 June, and within another ten days, after encircling Liuyang, the enemy was approaching Hengyang.[69]

Hengyang was of vital importance to both sides, for the city controlled the main lines of communication leading from Hankow to Nanning. Its position, moreover, was exceptionally strong, and if the Japanese drive could be halted at all, it was there. If the city fell, the southern half of the Hankow-Hanoi axis was almost certainly doomed. Gen. Fong Hsien-chien, who had accepted responsibility for the defense of the citadel, was determined to hold out as long as possible, hoping that aid might reach him in time to save the stronghold. He had important advantages. For instance, terrain forced the Japanese to follow a narrow avenue of approach, and made difficult any move to bypass the city.

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Hengyang held for forty-nine days. During the first week in July the Fourteenth Air Force, performing superbly, staggered the enemy despite a major effort by Japanese air to defend its army's lines of communication. There were indications that the enemy was preparing to withdraw, and the streams of civilians seeking escape to the south paused in their flight. Some of them even turned back toward Hengyang. But the efforts of the Fourteenth Air Force had virtually used up its fuel at the forward bases, and during the second week of July no resupply came in from the western bases. On 12 July the 491st Bombardment Squadron, fearful of capture, withdrew on its emergency gas and temporarily left Liuchow for the Salween. Air operations were drastically cut, and between 17 and 24 July the 68th Composite Wing was practically grounded.[70]

On 8 August Hengyang fell. The long-anticipated Japanese drive from Canton had already begun in July. Heading north along the Canton-Hankow railway, a large and well-equipped force intended to strike Hengyang from the rear, but the early capitulation of the city simplified the enemy's problem. The Canton column turned west toward Liuchow, and the northern force late in August headed down the railway leading through Ling-ling to Kweilin. It soon became evident that in only a few weeks east China would be completely isolated. Already the air warning system, so painfully built up in earlier years,* had collapsed, with the result that the strips at Kweilin and Liuchow, chief of the remaining eastern airfields, were badly exposed.[71]

Kweilin was so immediately endangered by the fall of Hengyang, that the next job for Vincent—who, incidentally, had been made a brigadier general on 2 June 1944—was the defense of Liuchow. If Vincent's prospect was hopeless, it was no fault of the air task force he headed. From 26 May through 1 August its planes had flown 5,287 sorties, over 4,000 of them by fighter aircraft. A total of 1,164 tons of bombs had been dropped, and more than a million rounds of ammunition had been expended, chiefly in strafing attacks. Out of an over-all strength of approximately 150 aircraft, 43 had been lost but only 3 of that number were credited to enemy pilots. It was estimated that the task force had cost the enemy 595 trucks, 14 bridges, some 13,000 casualties, 114 aircraft, and more than 1,000 small boats.[72]

Throughout the summer Vincent had tried desperately to meet the

* See Vol. I, 424.

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needs of the retreating Chinese troops. During July he was able to undertake as many as 814 sorties to Hankow and its neighborhood, chiefly for the purpose of disrupting the enemy's communications, but the total fell to 587 in August.[73] In direct support of the receding battle lines the Americans, whose tactics heretofore had emphasized attacks close to the fight, now experimented with strafing and bombing immediately in front of the Chinese soldiers. Kweilin, Ling-ling, and Chihkiang served as the bases from which operations were launched. Enemy air raids became more frequent, but though the Japanese usually enjoyed the advantage of surprise, they continued to accomplish little damage.[74]

It was indeed ironical that the increased Hump tonnage assigned the Fourteenth Air Force in June did not really make its effects felt at the front until sometime in August when the battle for the axis airfields was in its last stage. Nevertheless, Vincent was able to raise the tempo of his activity: in September his pilots logged 1,469 sorties.[75] It was all in vain. The Chinese troops were too far spent in physical stamina and morale to stage a comeback. Ling-ling fell on 4 September, and on 26 September enemy forces advancing from Canton overran Tanchuk. By 11 October the Kweilin airstrip faced imminent envelopment.[76] Sweeping past the little islands of Chinese resistance, the Japanese went on to take Kweilin on 10 November and Liuchow on the 11th. Only Nanning in the far south remained in the hands of the Chinese and Americans, and even that city was obviously doomed. Japan had all but completed the axial corridor between Manchuria and French Indo-China.

Under the circumstances, a complete revision of strategy was demanded of the Fourteenth Air Force if it was to survive—and there were some who thought that its days were over. Now, particularly, Chennault was not ready to quit, with unbelievably greater supplies coming to the front each day, and week, and month from the soaring totals of Hump tonnage. Determined to keep part of the Fourteenth in the east China provinces between the corridor and the sea where the fight could be maintained for at least many weeks and further assistance could be given to the troops of Marshal Hsueh Yo,[77] Chennault placed his other units along a line of airfields, some of them recently constructed, which paralleled the corridor Sian to Poseh. The 321st Fighter Wing was in the north; the Chinese-American Composite Wing was between Laohokow and Chihkiang; and Vincent's 68th

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Wing, commanded now by Col. Clayton Claassen, occupied a new set of fields between Kunming and the axis, following the Hengyang-Liuchow line. Thus, the Fourteenth Air Force was ready to continue the fight, and in some ways was stronger than ever before.[78]

General Stilwell, however, could find nothing favorable in the situation. In his final report to the Chief of Staff, USA, covering the period 21 May 1942–24 October 1944, he spoke feelingly about the loss of the China airfields, built at a cost of two billion Chinese dollars and intended to assist in the fulfillment of American strategy in the Pacific. All was gone, he said—two and a half years of American effort had been destroyed, and American air power was pushed back against the base at Kunming.[79] Stilwell attributed the disaster to the rejection of his advice at TRIDENT in the spring of 1943.*

Stilwell's Recall

The loss of the airfields must have been very poignant to Stilwell, and certainly the serious reverses suffered in east China aggravated the unhappy and unfortunate personal relationship between the Generalissimo and General Stilwell. To recount the full history of the Chiang-Stilwell misunderstanding would require a study of some length, more voluminous, indeed, than *The Stilwell Papers*,[80] the posthumously published book which gives only one side of the question, and it would go far beyond the range of air force interests. Yet, in an account of AAF activities on the continent of Asia, it is impossible to ignore Stilwell's recall. Stilwell's command of CBI, in addition to its diplomatic aspects, was primarily one of an air theater, and his departure affected a variety of decisions which thereafter governed the organization and operations of the AAF units in China, Burma, and India.

Although the misunderstanding between Chiang and Stilwell was old and deep-rooted, the relationship between the two men had become especially critical in the spring of 1944. Stilwell had long enjoyed control of lend-lease materials intended for China, a fact that probably gave affront to the Oriental dignity of the head of the Chinese state. When, after the Tehran conference of December 1943, promises made to Chiang at Cairo were revoked,† the Generalissimo found confirmation of his suspicion that the British were unwilling to

* See Vol. IV, 442.
† See Vol. IV, 495–97.

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fight for anything other than their own interests in CBI. The Russian influence on the reversal of commitments made at Cairo seems to have become tied up in his mind with the "fishing agreement" between Moscow and Tokyo reached in 1944. And soon thereafter came suggestions through the American embassy at Chungking, with backing from CBI headquarters, that an American mission might be sent to Yenan "to contribute to the friendly and harmonious solution of difficulties" separating the Communists under Mao Tse-tung and the Kuomintang.[81] In December 1943 Chiang had refused to commit his Yunnan Force to projected operations in the Salween region of Burma unless the British came through with full-scale supporting amphibious operations on the coast of Burma. Stilwell interpreted this refusal as one more indication of Chiang's unwillingness to fight, and determined to force his hand. On 7 April 1944 Stilwell informed Marshall that since "the Generalissimo won't fight in spite of his promises," it was necessary to direct all "remaining tonnage allocated by this headquarters to Chinese agencies for April to Fourteenth Air Force."[82]

Though Chennault was the immediate beneficiary of this decision, the action carried its own warning, and the Generalissimo soon agreed to commit the Yunnan Force to the Salween offensive in May. This offensive, thus belatedly started, made no progress, and meanwhile the Japanese launched their successful offensive in east China. Stilwell's delay in responding to the summons for consultation on the new emergency undoubtedly offended the Generalissimo further,* for Stilwell was not only the ranking U.S. commander but chief of staff to Chiang.

When the Vice President of the United States, Henry A. Wallace, visited Chungking on 20 June 1944, he found a dangerous situation. Reporting to Roosevelt in a message of 28 June, Wallace conveyed Chiang's request for the appointment of "a personal representative" to act as liaison between Roosevelt and himself and advised the President that "a move of this sort, but of an even more far-reaching nature" seemed to be indicated by the political and military situation to China. Chiang had bluntly stated that Stilwell no longer enjoyed his confidence, "because of his alleged inability to grasp over-all political considerations." Wallace doubted that any American officer currently in China could undertake the responsibility. Chennault had Chiang's full confidence but he should be left in "his present effective military

* See above, pp. 219–20.

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position." What was needed was a man who could win the confidence of Chiang and thus influence political as well as military decisions, and who, commanding all American forces in China, could "achieve full coordination between the American and Chinese military efforts." Since Stilwell could not abandon his responsibilities in Burma, the appointment of another commander for China seemed to Wallace a logical move. Such a commander might be Stilwell's deputy in China, "with a large measure of local independence and the right to deal directly with the White House on political questions," or China might be separated from Stilwell's command. Lt. Gen. Albert C. Wedemeyer had been strongly recommended to Wallace for such a post. Wallace expressed regret at the necessity of making such a recommendation without having talked with Stilwell, but did not doubt the need for the action recommended. Time was a vital factor. East China seemed to be imperiled, and its loss could be expected to produce "a violent political and economic shock to the already weakened Chungking regime." But the right man might be able to persuade Chiang "to reform his regime and establish at least the semblance of a united front," both of which steps Wallace considered necessary to the restoration of Chinese morale.[83]

In Washington the Joint Chiefs of Staff on 4 July 1944 urged the President to secure Chiang's agreement to the placing of all Chinese forces under Stilwell's command, and recommended the latter's promotion to the rank of full general. The Joint Chiefs were "fully aware of the Generalissimo's feelings regarding Stilwell, particularly from a political point of view," but they argued that he had "proved his case or contentions on the field of battle in opposition to the highly negative attitudes of both the British and Chinese authorities." Had Stilwell's advice been followed, the argument continued, "we would have cleared the Japanese from northeast Burma before the monsoon and opened the way to effective action in China proper."[84] Two days later the President announced to Chiang his intention to promote Stilwell and recommended that he be placed in command of all Chinese and American forces directly under the Generalissimo.[85]

General Marshall, in notifying Stilwell of the President's action, spoke with unusual frankness of the offense Stilwell had given both Chiang and Roosevelt, "usually in small affairs," because of a failure to promote "harmonious relations." While acknowledging the generosity with which Stilwell theretofore had accepted his "disagreeable

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radios," the Chief of Staff urged that he make "a continuous effort to avoid wrecking your and our plans because of inconsequential matters or disregard of conventional courtesies."[86] On 9 July Stilwell replied to this unmistakably plain message, promising to justify the confidence given even though the load promised to be heavy "for a country boy."[87] That same day Chiang gave his agreement, though he maintained that political considerations would require some delay in fulfilling the promise.[88] The President expressed his pleasure that Chiang had agreed in principle, but urged that the military situation had become so grave as to warrant immediate action without reference to political factors.[89]

Though Chiang had hedged his acceptance of the proposal with an important reservation, the American government had given Stilwell strong backing, and in mid-July he probably had within his reach full command of the armies in China. But the deep-rooted fears and prejudices of CBI were hard to bury. In Stilwell's mind the Generalissimo's delay evidently became only another example of his old tendency to "procrastinate."[90] When on 20 July, in the desperate fight for Hengyang, the Chinese appealed through Maj. Gen. Thomas Hearn, Chief of Staff, USAF, CBI, for additional assistance via the Hump for Chinese ground forces, Stilwell in reply pointed to previous CCS decisions in favor of Chennault's strategy. "I do not see how we can move," Stilwell added, "until a certain big decision is made." He was doing the best he could meanwhile "to carry out plans the Gissimo insisted upon."[91] When on 19 August Chennault appealed through Hearn for airlift from India of 1,000 tons of ground force supplies to equip a Chinese army for a possible attempt to retake Hengyang, Stilwell replied that the "time for halfway measures" had passed. "Any more free gifts" could only delay "the major decision and play into the hands of the gang." The cards had been put on the table but no answer had been given. "Until it is, let them stew."[92] This was translated by Hearn into more polite language for transmission to Chennault, but the answer remained an unmistakable no.[93]

Meantime, and in harmony with Wallace's recommendations of late June, President Roosevelt had selected Brig. Gen. Patrick Hurley as his personal representative to the Generalissimo.* Hurley reached

* Unfortunately, Hurley was given only a verbal directive, but conversations with General Hurley, plus careful study of his personal files, indicate a three-fold mission: to facilitate Stilwell's assumption of command over the Chinese armies, to strengthen in all possible ways the Nationalist government of Chiang, and to encourage the development of a united front of Nationalist and Communist against the common enemy.

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China by way of Moscow and India. He met Stilwell in Delhi on 4 September, and together they left the next day via Chabua for Chungking, where they arrived on 6 September. Twenty-four hours later Hurley informed Roosevelt the Generalissimo had given his assurance that Stilwell would get the command requested by Washington.[94] Although almost two months had passed since Chiang's original promise to Roosevelt had been made, certain details remained to be worked out: Stilwell's title, the preparation of a written commission (something not familiar to the practices of the Chinese Army), and the drawing of organization charts fitting Stilwell into a Chinese chain of command. These details might easily be regarded as evidence of an inclination to further delay, but Hurley was convinced of the Generalissimo's good faith. By 19 September General Hurley felt that the issue had been settled.[95]

That very day, however, events took an unexpected turn. Unknown to Hurley, Chiang had summoned Stilwell to a conference on 15 September and informed him of a purpose to withdraw the Yunnan Force to the east bank of the Salween unless Stilwell got his forces moving from below Myitkyina toward Bhamo within a week.[96] This ultimatum, however great may have seemed its justification in the mind of the Generalissimo, was received by Stilwell as further confirmation of old suspicions. In a message to Marshall, of which neither Chiang nor Hurley received word or copy, Stilwell reported the conversation. His troops were not ready for renewal of the offensive; the demand could mean only a purpose to sabotage the Burma effort on the part of Chiang, who would "not listen to reason, merely repeating a lot of cockeyed conceptions of his own invention."[97]

Stilwell's message reached Marshall during the closing hours of the OCTAGON conference at Quebec. Marshall reported its contents to the Combined Chiefs on 16 September and summarized a message to be sent to Chiang by President Roosevelt.[98] The President's message, dated 16 September, spoke "with complete frankness." By continued cooperation in Burma the Generalissimo might expect a land route open to China early in 1945. To prevent the enemy from achieving his objectives in China, there was no other course open than for Chiang to press the Salween offensive and to place Stilwell "in unrestricted command" of all his forces. This action would strengthen the British and American decision to pursue vigorously their purpose to open a land route to China. Withdrawal of the Salween forces would doom this hope and even jeopardize the air route to China—developments

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for which Chiang must be prepared "to accept the consequences and the personal responsibility."[99] Thus, in reply to Chiang's ultimatum, there was an ultimatum to Chiang from the President of the United States, to be delivered by Stilwell who was the Generalissimo's chief of staff.

For some reason this message was not received in Chungking until the morning of 19 September, and it came to Stilwell. That afternoon Hurley, still ignorant of the President's action, went from Chungking to the Generalissimo's summer residence in the hope of completing negotiations for Stilwell's appointment as commanding general of the Chinese armies. The discussion was interrupted by Stilwell bearing the presidential communication. Chiang, having read the document, indicated only that he wished to be alone.[100]

Three days passed with no action taken, and then on 23 September Stilwell sent a memorandum to Hurley.[101] The first three paragraphs are quoted in full:

> Something must be done to break this stalemate, and it is up to us to do it. *CKS* is sulking, and the W.D. expects us to handle him.
>
> It is obvious that CKS is listening to our recommendations. He changed his plans at Kweilin, he put Pai Chung Psi back in,* he executed the 93rd Army Comdr., and he is moving six divisions down from the N.W.† Apparently he is ready to pass the command, and even use the Reds, if they will acknowledge the authority of the C.G.‡
>
> What he is really gagging at is Lend-Lease, and it is a serious matter of face with him that Stalin and the British can handle the stuff and he can't. The pros and cons are well known; the problem remains unsolved.

This introduction was followed by a suggestion that Stilwell and Hurley lay before Chiang two propositions as a basis of settlement: first, that Stilwell be sent to the Chinese Communists with proposals to accept the authority of the Generalissimo and Stilwell's command of their forces in return for a promise to equip five divisions; and second, that Chiang be given control of Chinese lend-lease materials, on the understanding that the "X and Y forces," those committed in Burma at Ledo and the Salween, enjoy first priority.

Hurley considered Stilwell's proposals as a very hopeful move, but when he went to Chiang for the purpose of discussing them he was promptly told that Stilwell would have to go.[102] Two days later, 25 September, Hurley received an aide-mémoire from Chiang for transmission to Roosevelt formally requesting Stilwell's recall.[103] The Gen-

* As Deputy Chief of Staff.
† All these moves were advocated by Stilwell.
‡ Central Government.

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eralissimo agreed to the choice of an American general officer as "Commander-in-Chief of the Chinese-American forces fighting against Japan in China," to his appointment as "Chief of Staff of the Chinese Theater," and to American control "of the Chinese Service of Supply." But he asked for Stilwell's resignation "as Chief of Staff of the China Theater and his relief from duty in this area." In reviewing the conversations he had had with Hurley, Chiang expressed the opinion that "we were indeed on the eve of complete agreement," but it had become clear that Stilwell "had no intention of cooperating with me, but believed that he was in fact being appointed to command me." Any other American officer possessing the "spirit of genuine inter-allied collaboration" would be warmly welcomed.

On 5 October Roosevelt urged Chiang to reconsider.[104] In a second aide-mémoire of 9 October to Hurley for transmission to the President, the Generalissimo charged that Stilwell had sacrificed east China for the sake of his campaign in Burma. More than that, he had "exhibited complete indifference to the outcome in East China," having refused even to consult with Chiang on the situation there until the first week of June 1944.[105] On 13 October Hurley advised Roosevelt "that if you sustain Stilwell in this controversy you will lose Chiang Kai-shek and possibly China with him."[106] The President replied on the next day with a request for Chiang's choice of a successor.[107] Eisenhower had been the first choice, Hurley informed Roosevelt on 15 October, but since this was out of the question, the list was Patch, Wedemeyer, and Krueger, with preference for the second over the last because of age.[108] On 18 October Stilwell received orders to proceed to India at once and thence to Washington.[109] That same day Roosevelt informed Chiang of Stilwell's recall and emphatically protested his own, rather than Stilwell's, responsibility for the decision to concentrate on opening the Ledo Road. He did not intend to appoint an American officer as commander in chief of the Chinese armies, but Wedemeyer had been selected for appointment as the Generalissimo's chief of staff for the China Theater. CBI was now to be divided into the China Theater, with Wedemeyer in command of American forces there, and the India-Burma Theater with Lt. Gen. Daniel I. Sultan in command. The Generalissimo was requested to place under Sultan the Chinese forces committed to the Ledo offensive.[110]

When Sultan assumed command of U.S. Army Forces, India-Burma Theater, on 27 October 1944, the separation of CBI into two theaters became an accomplished fact.[111] Wedemeyer reached China on 31 Oc-

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tober and formally assumed command of U.S. forces in the China Theater at once.[112] The change pleased Mountbatten,[113] who had had his own difficulties with Stilwell regarding proposals for reorganization within SEAC. Mountbatten promptly resumed his efforts to win support for his plans. First, he undertook to persuade the Americans to redesignate IBT as the Southeast Asia Theater because of the advantage such a designation might have in advertising "to the world at large" the Anglo-American partnership in that area.[114] His request was refused on the ground that a large part of Sultan's forces, being in India, were not within the boundaries of SEAC.[115] Mountbatten had better luck with his other suggestions. He had little difficulty in winning American approval of the appointment of Gen. Sir Oliver Leese as the Allied Land Forces Commander-in-Chief, a new post in the Southeast Asia Command, made effective 11 November. There was some opposition, soon overruled, by Washington and EAC to the appointment of Sir Trafford Leigh-Mallory, then serving under Eisenhower, as the successor of Sir Richard Peirse, who retired as Air Commander-in-Chief, SEAC. On 16 November Mountbatten was informed that the plane bearing Leigh-Mallory had been lost, and the appointment went to Air Chief Marshal Sir Keith Park on 1 December.

The Eastern Air Command, too, underwent a final reorganization early in December 1944. In planning the renewal of offensive operations in Burma, Mountbatten desired the release of two RAF groups from other duties for direct support of specified ground forces based on intimate contact between air and ground headquarters. Consequently, Stratemeyer inactivated the Third TAF, effective 21 November, and on 1 December, by a general order effective three days later, he reorganized EAC as follows:

Component	*Composition*	*Mission*
Tenth Air Force	AAF	Protection of ATC and NCAC
Strategic Air Force	AAF and RAF	Strategic offensives
221 Group	RAF	Support of Fourteenth Army
224 Group	RAF	Support of 15 Corps
Combat Cargo Task Force	AAF and RAF	Air supply for Fourteenth Army
Photo Reconnaissance Force	AAF and RAF	Photographic missions for EAC
Wing Headquarters (Baigachi)	RAF	Defense of Calcutta area and VHB bases

It was with these last-minute changes in organization that SEAC and EAC faced the new and victorious year of 1945.

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CHAPTER 8

* * * * * * * * * * *

THE LIBERATION OF BURMA

AFTER the occupation of Myitkyina on 3 August 1944, more than two months elapsed before the Allied forces were ready to renew offensive operations. During the intervening weeks, SEAC strategists produced blueprints for three coordinated attacks: Operation CAPITAL for the liberation of north Burma, Operation ROMULUS to clear the Arakan of enemy forces, and Operation TALON for capture of Akyab. Of these operations, the first was by all odds the most important. Phase I of CAPITAL, scheduled to be terminated by 15 December 1944, called for the expulsion of the enemy from all points in Burma north of a line drawn slightly south of Indaw, Kunchaung, Sikaw, and Namhka; Phase II, to be completed by 15 February 1945, called for ejection of the Japanese from the entire region north of a line Kalewa-Shwebo-Mogok-Lashio. If in the execution of this and the two lesser operations large numbers of enemy forces could be destroyed north of Mandalay, the Allies were to be committed to an immediate advance on Rangoon. On the other hand, if the Japanese escaped from northern Burma without crippling losses, SEAC intended to hold the Kalewa-Lashio line during the months of bad weather, May to October. An amphibious attack, coded DRACULA, would then be staged against Rangoon in the autumn of 1945.[1]

When plans for Operation CAPITAL were completed toward the end of September 1944, the Allied armies, soon to come under the command of Gen. Sir Oliver Leese, were deployed along three fronts. Stilwell's Northern Combat Area Command (NCAC), which would soon be placed under Lt. Gen. Daniel I. Sultan, held recently occupied positions south of Myitkyina. In northeastern Burma Brig. Gen. Frank Dorn's Chinese YOKE Force held positions along the line of

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the Salween River. West of NCAC, the British Fourteenth Army (4 and 33 Corps) under Lt. Gen. Sir William Slim, occupied positions which extended southward toward the Arakan, where the British had their 15 Corps under Lt. Gen. Sir Montague Stapford.[2]

Both on the ground and in the air the Allies possessed an overwhelming numerical superiority. Available British and Indian combat troops numbered 628,000, in addition to 58,000 Chinese, 32,000 Africans, 10,000 Kachins, and 7,000 Americans. Some 275,000 "lines of communications" troops brought the total strength to better than 1,000,000 men. Against this vast army the Japanese had an estimated 220,000 soldiers in Burma, with approximately 190,000 others stationed in Thailand, Indo-China, Malaya, and Sumatra.[3] Eastern Air Command in September 1944 had nearly 900 aircraft, and this number was increased to almost 1,500 by December.* They were operated and maintained by a total of 100,000 to 150,000 officers and enlisted men.[4] In contrast, the Japanese were estimated to have only 160 planes in October and approximately 300 in December.[5]

Following the occupation of Myitkyina, General Stilwell had reorganized the Chinese forces which constituted the main ground strength of NCAC: the Chinese First Army, under the command of Lt. Gen. Sun Li-jen, included the 30th and 38th Divisions; the Chinese Sixth Army, under Lt. Gen. Liao Yao-hsiang, was composed of the 14th, 22d, and 50th Divisions. In addition, Stilwell had the British 36 Division, a composite Chinese-American force (the Mars Brigade) composed of remnants of Merrill's Marauders and some inexperienced replacements sent for that organization, a Chinese regiment, a Chinese

AVERAGE NUMBER OF AIRCRAFT IN EAC
SEPTEMBER–DECEMBER 1944

	Fighters		*Heavy Bombers*		*Medium Bombers*	*Reconnaissance*
	AAF	*RAF*	*AAF*	*RAF*	*AAF*	*AAF*
September	144	254	55	46	72	61
October	170	321	56	46	83	61
November	216	380	52	50	97	65
December	233	524	44	60	92	60

	Transports		*TOTAL Possessed*		*TOTAL Operational*	
	AAF	*RAF*	*AAF*	*RAF*	*AAF*	*RAF*
September	199	37	531	337	432	267
October	226	40	596	407	487	340
November	267	57	697	487	577	397
December	364	94	793	678	661	582

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tank brigade, and a force of Kachins. Under the over-all control of the Eastern Air Command,* the U.S. Tenth Air Force supported the Allied forces in NCAC. The RAF 224 and 221 Groups supported the 15 Corps and the Fourteenth Army respectively, while the Combat Cargo Task Force, activated in September under the command of Brig. Gen. Frederick W. Evans with headquarters at Comilla, provided air supply for the latter. The Strategic Air Force carried on long-range attacks against enemy communications in south Burma, Thailand, and Malaya. In preparation for the fall offensive Tenth Air Force transferred its headquarters from Kanjikoah to Myitkyina, 221 Group went to Mon-ywa, and 224 Group located its headquarters at Cox's Bazar.[6]

The difficulty for the Japanese, who had to make every effort to hold south Burma as the first line of defense for Thailand and Malaya, was increased by the critical situation in the Pacific. With the rapidly developing threat to their position in the Philippines and on Formosa, it was difficult for them to secure proper reinforcements in men, aircraft, and equipment for southeast Asia. The Japanese command chose essentially the same defense line set by the Allies as their objective during Phase II of Operation CAPITAL: Lashio–Mandalay–Yenangyaung–south Arakan. The Japanese well understood that holding this line depended upon gaining time to prepare its defenses; that time they failed to win.[7] The enemy already had lost control of the air in Burma and was destined never to regain it. With commitments to support the armies in China and with the drain imposed by the heightening battle in the Pacific, the enemy's air forces in southeast Asia could muster only feeble efforts to disrupt Hump operations to China and occasional attacks on other Allied transport planes. Even this effort lacked spirit.[8]

Preparations made by Eastern Air Command guaranteed that Allied air superiority would be maintained. With its units moved to forward bases, EAC assigned special areas of responsibility for counter-air activity in a systematic attempt to keep the enemy air units under constant control.[9] A special radio net supervised by EAC would serve to alert the Tenth Air Force, 221 Group, and 224 Group. All known airfields in north and central Burma used by the enemy for staging purposes were assigned as the responsibility of the nearest Allied force. When it became known that enemy aircraft were staging in the for-

* See above, pp. 204–7.

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ward regions,[10] or that an enemy attack on Allied positions was in progress, each commander was to order his planes to strike the assigned enemy fields, preferably at the expected hour of Japanese refueling. This plan coordinated attacks against all fields which the enemy was likely to use, minimized the chances of his aircraft escaping by separating into small groups, and hoped to attack his planes at the most vulnerable time. The method was so effective that by the end of 1944 EAC was complete master of the Burma air, and the enemy was made incapable of any serious offensive action.[11] The Japanese pulled more and more of their planes back from the forward area in Burma to bases in Thailand. These moves increased the distance that Allied aircraft had to cover in order to continue their counter-air effort, but undeterred by long flights, the Anglo-American pilots of EAC continued to punish the retreating enemy. In the later stages of the Burma campaign an increasing part of the burden necessarily fell to Strategic Air Force.

SAF Operations

Operational directive No. 14 of EAC, dated 19 September 1944, assigned to the Strategic Air Force special responsibility for all targets lying south of the 22d parallel and east of the Salween River—an area of responsibility reaching into Malaya and Indo-China and including all of Thailand. There were slight modifications made in the boundaries by directives of October and December, and in February 1945 the line was moved slightly to the west to include the Rangoon estuary and was restricted at the same time in the east by the frontier between Thailand and Indo-China.[12] Nevertheless, between October 1944 and April 1945 operations of the Strategic Air Force were generally curtailed in the west and concentrated in the east. This was done because of the advance of the Allied armies and also because it was noticed that the Japanese were improving the line of communication from Bangkok north through Thailand to Bhamo and the Yunnan front. Also the Bangkok-Chiengmai railway had been strengthened, and the roadways leading from Thailand to the Shan States had been repaired and improved. Japanese communications through Thailand, therefore, loomed as targets of prime importance.[13]

EAC's operational directive No. 16 of 18 October 1944 listed the following objectives for strategic bombing: the mining of enemy-held ports; destruction of naval and merchant vessels as targets of oppor-

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tunity; and disruption of communications within or leading into Burma, with special attention to the Bangkok-Pegu railway and parallel roadway, the Chiengmai-Kentung lines of communication, and the 360-foot Ban Dara bridge of the Bangkok-Chiengmai line. In addition, bombing attacks were ordered on locomotives and rolling stock, air force installations, ports and shipping facilities, military depots and dumps, and centers of Japanese administration.[14]

The practicability of mining operations had been already established. On 12 September 1944 the Pakchan River had been heavily seeded and the flow of traffic up the stream disrupted.[15] After Bangkok, Koh Sichang, and Tavoy had been mined, there followed in October a remarkably successful mining of the inner approaches to Penang by fifteen Liberators, each of which laid four 1,000-pound mines "precisely in the position ordered."[16] The aircraft flew from Kharagpur to Penang and returned, a distance of 3,000 miles, without mishap.[17] Other areas mined during the month were Mergui, Ye, and the Pakchan River. In November there were fewer mines laid though more areas were visited.[18]

With the beginning of October 1944, antishipping activities were stepped up with a series of heavy raids directed against the docks and jetties of Moulmein.[19] In November, despite a reduction in operations of about 50 per cent to accommodate special training in formation flying, navigation, gunnery, and aircraft recognition, the Strategic Air Force flew 697 sorties and dropped more than 1,000 tons of bombs.[20] In long-range attacks B-24's wrecked the Ban Dara bridge on 3 November,[21] and the next night the Liberators successfully struck in force the Makasan workshops at Bangkok and the Insein works at Rangoon. At both points the targets were left blazing. As the month advanced, attacks continued against tunnels, bridges, and railway facilities and equipment. On 15 November the Mergui waterfront was bombed by fifteen Liberators and three days later the jetty at Martaban was fired. On 22 November the port of Kao Huakang, which the Japanese had built north of Victoria Point, was razed.[22] On 26 November Liberators inflicted severe damage on the Pyinmana station and sidings, and 28 and 29 November brought heavy attacks on the Mandalay and Bangkok marshalling yards.[23] At the close of the month Strategic Air Force counted a total of 3,078 tons of bombs dropped in 1,513 sorties flown during the preceding six months.

With the restoration of full operating strength in December, fol-

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lowing a training period, the heavy bombers during the ensuing five months were to break the record set during the period 1 January to 31 May 1944, when 4,109 sorties had been flown and 6,859 tons of bombs had been delivered. Between 1 December 1944 and 30 April 1945, the air force flew 4,500 sorties, but of even greater significance is the fact that the 13,000 tons of bombs dropped almost doubled the total for the earlier period even though the difference in the number of sorties was relatively small.[24] This extraordinary achievement spoke well for the training the crews had been put through during November, and for efforts to improve the equipment used. Early in 1944 the 1,000-mile flight to Bangkok had been close to the extreme radius of a B-24 carrying a 3,000-pound bomb load. By the end of the year, however, a variety of devices for conserving fuel and increasing the bomb load made it possible for a Liberator to deliver to the same target as much as 8,000 pounds of bombs.[25] The bombs themselves, moreover, had been rendered more effective. A simple nose spike, inserted to prevent ricochet when a bomb was dropped on railroad tracks, had been employed both by the Germans and the Allies in North Africa, but the device reached its full development in the India-Burma Theater. The Azon bomb, a more intricate mechanism which could be radio-controlled in its flight, received its first combat test by the Tenth Air Force in a mission of 27 December 1944. The new weapon proved especially helpful in the interdiction of rail lines, and its use reduced materially the number of aircraft required for that purpose.

In order to utilize to the maximum the limited technical and maintenance personnel available, all Azon bombing equipment was concentrated in the 493d Bombardment Squadron of the 7th Bombardment Group. Best results were obtained by dropping bombs singly from an altitude of 8,000 to 10,000 feet.[26] Such a procedure required as much time as possible over the target, and the success with which the new weapon was employed in Burma owed much to the weakness of enemy ground defenses.[27] In April 1945 Stratemeyer wrote Arnold: "The 7th Bomb Group's Azon bombing continues to be highly successful, with one mission getting four bridges with four bombs, and another getting 6 direct hits on two bridges with 6 bombs."[28] To the new bombs the Strategic Air Force added a psychological weapon—leaflets to warn the natives away from railroad tracks and installations. With more effective bombing to drive home the warning, trackmen, switchmen, and other laborers feigned illness or without excuse van-

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ished into the hills. At least partly because of this, during 1945 the enemy suffered a critical shortage of labor for his railway system.[29]

SAF's operations in December 1944 centered around southern Burma, with special attention devoted to railway communications with Thailand, and these areas continued to receive major attention as the effort to choke off supplies to the Japanese Army in Burma continued into 1945.[30] Leaving to the B-29's of XX Bomber Command such distant targets as Singapore and Kuala Lumpur,* Strategic Air Force's Liberators carried their attacks down the Malay Peninsula as far as Na Nian, some 150 miles south of Chumphon.[31] Bridges, railways, roads, and canals were broken more rapidly than the enemy could repair them through January, February, and March. In April supply dumps in the Rangoon area were attacked five times by formations of bombers varying in strength between twenty and sixty aircraft. Stores at Moulmein were hit on 7 April, and a week later the 7th Bombardment Group knocked out the Sarnsen Power Station near Bangkok. The climax was reached on 24 April when the 7th Bombardment Group sent forty planes against the Bangkok-Rangoon railway line, claiming on this one day thirty bridges smashed and eighteen damaged between Kanchanaburi and Thanbyuzayat.[32] These more distant attacks were supplemented by those of SAF's medium bombers to deny the enemy full use of transportation facilities leading northward from the major depots to the battle lines.

The cost paid by the Strategic Air Force was surprisingly low. Though the Japanese defense was sometimes ingenious, it was seldom effective. In addition to the usual employment of AA, land mines were exploded by remote control to wreak some damage on aircraft attacking railway lines and bridges at low altitudes. Flat cars were turned into flak wagons armed with machine guns and light AA including 40-mm. guns. These flak wagons sometimes fought back from fixed positions on sidings and sometimes as part of a moving train. In the course of the first five months of 1944, SAF had lost eight heavy bombers, six of them American and two British, and fourteen medium bombers, twelve American and two British. Between June and November 1944 the British paid with two Wellingtons and fourteen Liberators while the Americans sustained a loss of four B-24's. Between December 1944 and the end of April 1945, the British lost fourteen more Liberators and the Americans seven B-24's. In all, sixty-three

* See above, pp. 159–63.

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EAC aircraft engaged in strategic bombing went down under enemy fire, thirty-four British and twenty-nine American.[33]

Compensation for these losses was the cumulative effect of the bombing. As early as September 1944, it was learned that some Japanese detachments had died of starvation. By December of that year the enemy suffered from such a shortage of locomotives that the efficiency of his railway communications was drastically cut. Moreover, long sections of railway lines were unserviceable for weeks at a time because of broken bridges and tracks. When the Japanese turned to the use of roadways, planes of shorter range made devastating attacks upon motor transports. The damage to port facilities and to shipping by aerial mining added to the enemy's embarrassment.[34] It is impossible to measure exactly SAF's contribution to the victory in Burma, but there can be no doubt of the substantial assistance rendered.

The Freeing of Northern Burma

NCAC's headquarters had been moved to Myitkyina on 1 October 1944, and two weeks later the 38th Division of the Chinese First Army struck south toward Bhamo to initiate the ground offensive for the liberation of northern Burma. Simultaneously, the Chinese Sixth Army moved out in a southwesterly direction and soon swept through Shwegugale and Shwegu. Along the Salween, China's Yunnan forces fought through the rain, sleet, snow, and mud of the river gorge to capture Teng-chung, Lung-ling, and Mang-shih and then moved west toward Wanting in an offensive that brought again into the news place names not included since the spring of 1942. Two months to the day after the offensive opened, the 38th Division bypassed Bhamo and began, in conjunction with Dorn's forces advancing west of besieged Wanting, an encircling movement of Namhkam. It was captured in mid-January. By 27 January 1945 the trace of the Ledo Road had been cleared all the way from Ledo to China,* and the Allied line in eastern Burma was firmly fixed from the point where it crossed the Salween River, thirty-five miles northwest of Kunlong, along a line

* Throughout the summer of 1944—during the siege of Myitkyina and during the pause in the offensive from August to mid-October—construction on the Ledo Road had continued. Thereafter the engineers remained close behind the infantry, until Bhamo fell 15 December. From that point an old road swung southward like a crescent through Namhkam and back to Wanting where it joined the original "Burma Road" and crossed into China. Therefore, when the "trace" of the Ledo Road was "cleared" in late January 1945, the way was immediately open for traffic, and the first caravan passed from India to China without further delay.

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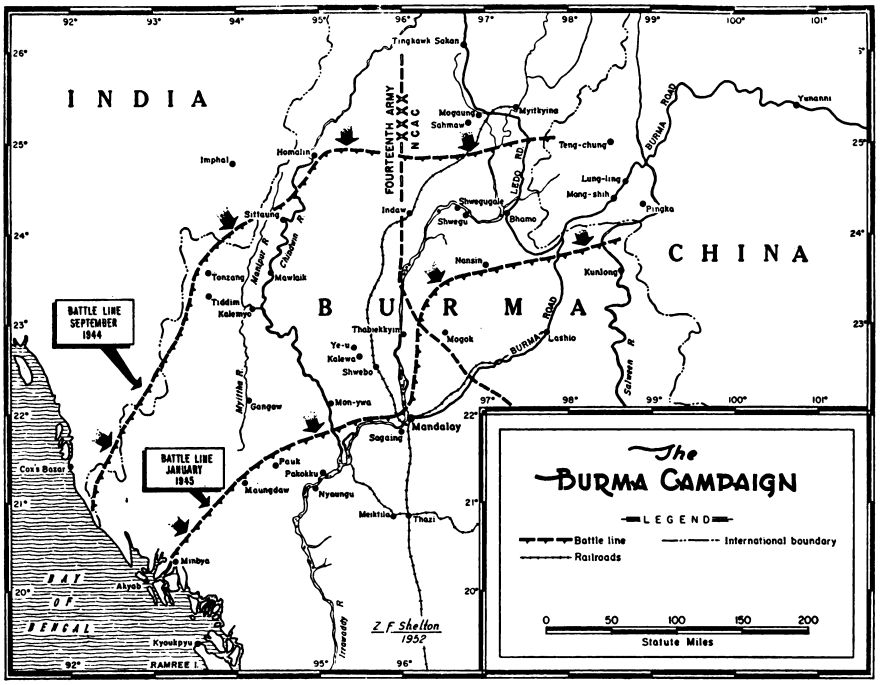
which ran southwest to a point sixty-five miles south of Bhamo and thence almost due west to the Irrawaddy River.[35]

At the Irrawaddy a juncture was made with the Allied forces which had advanced down the rail corridor from Mogaung to within thirty miles of Mandalay. These forces were the British 36 Division, which remained under NCAC until 1 April 1945, and the Chinese 22d Division. Having launched their offensive in conjunction with that of the Chinese 38th Division, they quickly took Mohnyin, Mawhun, and



Mawlu, where the 22d Division turned east on 6 November. The 36 Division took Indaw on 10 December and Katha the next day. Tigyaing was occupied on 23 December and Twinnge on 24 January 1945. At that point the 36 Division, having reached the southern limits of NCAC's responsibility, turned sharply to the east toward Mogok.[36]

While these advances were occurring in the area assigned to NCAC, the British Fourteenth Army in western Burma had struck the enemy with full force in a four-pronged drive radiating outward from the general area of Imphal toward Homalin in the north, toward

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Sittaung from Tamu; directly south from Tamu toward Tiddim, and down the Manipur valley to Tonzang. Once the movement gained momentum, success followed quickly. Tiddim was in Allied hands by 18 October and Kalemyo fell on 13 November. By 15 December the offensive crossed the Chindwin River at Sittaung, Mawlaik, and Kalewa. Finding themselves suddenly outflanked in the west, the Japanese began a swift retreat toward Wuntho, and before Christmas the Fourteenth Army was working in conjunction with the 36 Division to clear the enemy out of the Mogaung-Mandalay rail corridor. By early January 1945 Ye-u was captured. From that point a sharp salient was driven into the Japanese lines; Shwebo fell by the middle of the month; and thereafter the victorious troops met little opposition until they were within twelve miles of Mandalay. A sudden lurch to the south carried the battle line slightly west of Sagaing, along the elbow of the Irrawaddy westward and south of Mon-ywa, to Gangaw on the Myittha River and the frontier of the Arakan.[37]

In the Arakan, the far western sector of the Burmese battle front, victory remained with Allied arms. On 8 November 1944 Mountbatten had ordered the execution of Operations ROMULUS (clearing the Arakan) and TALON (capture of Akyab). The advance down the Kaladan and Kalapanzin valleys, begun on 12 December, was almost unopposed. By the end of January 1945 the Allied line had advanced from just east of Maungdaw to the outskirts of Minbya, a distance of sixty air miles; the distance, however, is a poor measure of the accomplishment. Following the sinuous coast line, the advancing armies took Akyab, occupied half of Ramree Island, and at Kangaw landed behind the Japanese positions at Minbya, thus threatening to outflank the enemy positions between the coast and the Chindwin River. When an amphibious landing was made on Akyab Island on 3 January 1945, it was found that the enemy had already left in his hasty retreat to the southeast.[38] At the close of January the battle line ran roughly northeast from Minbya to the Irrawaddy just above Mandalay, thence sharply north for more than ninety miles along the Irrawaddy and then approximately eastward to Kunlong on the Salween.

On the eve of the inauguration of the offensive in October 1944, Lt. Gen. Sir William Slim had announced to his Fourteenth Army that the "whole plan of battle" was based on Allied air support,[39] a statement which was no mere gesture of courtesy. Only by heavy dependence upon the unique assistance that could be given by air had it

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been possible to undertake and execute the coordinated movements on the ground which by February 1945 rendered the expulsion of the Japanese from Burma a question only of time.

Among the varied activities of Eastern Air Command, none was more important than the air transport provided by the Tenth Air Force and the Combat Cargo Task Force. During September 1944 troop carrier and combat cargo aircraft operating from Assam to northern Burma had carried 18,170 tons of supplies which were vital to the pre-offensive build-up. The cargo transported was principally food and ammunition, but such essential engineer items as trucks, bulldozers, and grading equipment were flown into Myitkyina to expedite the airdrome construction program for that area. Pipeline equipment was also delivered by air to assist SOS engineers in their efforts to complete a pipe-laying project from Tingkawk Sakan in the Hukawng Valley to Myitkyina by 1 October. With this special assistance, the project was finished on 28 September.[40]

With the coming of October, preparation for the heavier responsibilities of the ensuing months went forward rapidly.* The Combat Cargo Task Force had been intended at first to support both NCAC and the Fourteenth Army, but after 10 September CCTF was obligated only to Fourteenth Army. At Comilla a new headquarters, designated the Combined Army–Air Transport Organization, was established alongside General Evans' headquarters with responsibility for screening daily requests and establishing priorities for delivery. Headed by the air supply officer of Fourteenth Army and composed entirely of British personnel, this organization from 17 October forward functioned in close cooperation with CCTF.[41] That force began its heavy operations in October with an over-all strength of 163 transport aircraft belonging to the 1st Combat Cargo Group, the 1st Air Commando Group, and the RAF 177 Wing.

The growing importance of air transport once offensive ground op-

* In October the 3d Combat Cargo Group took over at Dinjan and the 443d Troop Carrier Group moved forward to Ledo, where it remained until May 1945. The 1st Troop Carrier Squadron continued to operate out of Sookerating until April 1945, when it moved forward to Warazup. By November 1944 the 2d Squadron moved to Shingbwiyang, where it operated until May 1945 and then moved to Dinjan. At the end of 1944 the 9th Combat Cargo Squadron moved forward to Warazup, and the remainder of the squadrons of the 3d Combat Cargo Group stayed in Assam, except for the transfer of the 11th Squadron to China in April 1945. During April the 13th Combat Cargo Squadron operated from Tulihal, on the Imphal Plain, in order to reduce flying distance to the 36 Division with its mounting needs for air supply.

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erations had begun is indicated by the fact that at the close of the campaign in the spring of 1945 the CCTF included two combat cargo groups, two air commando groups, and three RAF wings. By March 1945 the task force had a total strength of 354 planes. CCTF units had operated at first from fields at Sylhet and Tamu, but later the air transports flew from no less than eleven bases along the coast from Comilla to Akyab and inland as far as Meiktila and Toungoo.[42] The transport planes had moved forward with the advancing armies, serving as the vital link with rear areas upon which the ground advance depended. There were landings at primitive forward strips and air drops, both of men and supplies, at critical points along the battle line. On the return trips thousands of casualties—the victims of enemy guns or of disease—were evacuated to points behind the line where provision had been made for full medical care. The impressive totals for all types of cargo carried by the CCTF between October 1944 and May 1945 are as follows:[43]

	Supplies Short Tons	*Number of Persons*	*Number of Casualties*	*Total Tonnage*
October	8,960.19	11,907	5,196	10,841.52
November	13,748.51	19,854	8,289	16,844.24
December	23,738.07	35,196	10,980	28,817.43
January	39,564.38	35,780	10,414	44,645.72
February	54,327.26	40,610	11,378	60,045.94
March	66,155.74	56,972	19,888	74,610.34
April	66,388.61	77,026	16,801	76,709.58
May	59,253.56	61,792	11,297	67,293.35
GRAND TOTALS	332,136.32	339,137	94,243	379,808.12

No less impressive, in view of the difference in strength, was the record compiled by the troop carrier units of the Tenth Air Force.* Unfortunately, no dependable figures are available on the evacuation of casualties, a task in which troop carrier planes enjoyed the assistance of ATC's 821st Medical Evacuation Squadron. But the scale of evacuations, considered relative to strength, was comparable to that maintained by CCTF. Most of the evacuees were delivered to the extensive hospital installations at Ledo, and the peak of deliveries was reached in February 1945, when Tenth Air Force units brought out 3,189 casualties.[44] The tonnage of supplies and the number of men delivered to the front areas by Tenth Air Force units from July 1944 through April 1945 are indicated by the following table:[45]

* Although the CCTF had a total of 354 aircraft by March 1945, troop carrier units of the Tenth Air Force never possessed more than 120 planes. Much of CCTF's strength, however, was not acquired until late in the campaign.

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	Number of Sorties	*Tonnage of Cargo*	*Number of Men*
July	4,919	16,177	11,616
August	7,470	21,500	17,893
September	6,325	18,170	13,805
October	8,246	23,139	21,519
November	8,629	25,900	14,466
December	8,733	23,552	26,568
January	18,599	23,882	23,381
February	15,479	21,137	24,277
March	17,131	22,711	33,427
April	13,355	15,434	38,432
TOTAL	108,886	211,602	225,384

Air transport, though perhaps the most significant support rendered by air to the ground forces, represented only one part of EAC's activity during the climactic battle for Burma. Tenth Air Force P-47's and B-25's were especially active during October and November as the ground offensive moved through central Burma. In types of activity and in the techniques employed these operations followed patterns set during the months preceding the occupation of Myitkyina. Such air opposition as the enemy was able to put up caused little trouble, and by the end of the year it had virtually disappeared. Fighters and fighter-bombers struck at enemy defensive positions, troop concentrations and movements, and at supplies on the road or in dumps. The medium bombers specialized in attacks on enemy airfields and on transportation targets, supplementing the heavy bomber blows against more distant rail communications. In western Burma, RAF units provided the support for the predominantly British ground forces, but the 12th Bombardment Group occasionally lent the assistance of its B-25's. In eastern Burma, the Fourteenth Air Force's 25th Fighter Squadron and the 22d Bombardment Squadron assisted General Dorn's Yunnan forces.*

As the Allied armies advanced farther into the depths of Burma, they met fewer organized positions than at first so that there was much less need for direct support of the troops. Increasingly, the planes devoted their attention to ammunition dumps and enemy communications immediately behind the fighting.[46] Motor trucks were hunted with special vigor and fell victim to tactical aircraft in increasing numbers. Between 1 June 1944 and 2 May 1945 nearly 8,000 Japanese vehicles were claimed as destroyed. As the upper parts of the Burmese railway system were worked over, bridges, junction points, water

* See above, p. 214.

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towers, stations, rolling stock, and all forms of waterway transportation were subjected to repeated attack.[47] The 490th Bombardment Squadron (M) of the Tenth Air Force, known as the Bridge Busters,* claimed thirteen bridges within Burma during the first thirteen days of October.[48] RAF Hurribombers and Beaufighters continued to harass shipping along the coast and on the Chindwin River. So skillful did the air forces become in their attacks on enemy communications that some ground commanders, sensing the promise that they might quickly overrun all of Burma, argued for a curtailment of air activity lest continued attacks on the Japanese lines of communications cripple facilities needed by the advancing Allied ground forces. Stratemeyer objected that the enemy would scuttle whatever might be left by the air forces, but after a series of conferences in the spring of 1945 he agreed to a more selective policy of bombing.[49]

Capture of Rangoon

When Phase II of Operation CAPITAL opened in February 1945, the Allies held indisputable superiority in the air, and if Allied advantages on the ground seemed less impressive because the Japanese armies remained intact, the intangibles in the situation all favored the Allies. The taste of a long-delayed victory had boosted the morale of the Anglo-American-Chinese forces, while the Japanese faced the depressing prospect of additional losses. Moreover, the Allies had broken into open country and possessed the supplies and equipment to press their advantage. The Japanese, on the other hand, had been hurried back against a line they once had hoped to turn into a position of real strength, but the time and the means to accomplish this purpose had been denied them. Nor could their confidence be bolstered by news from the Pacific. By February the Americans had won their gamble at Leyte and could look forward to the early reconquest of all the Philippine Islands. After Halsey's Third Fleet had swept the Indo-China coast in January, Stratemeyer informed Arnold that the Japanese had pulled east so much of their already limited air strength in Burma as to leave Rangoon virtually undefended and to remove all cause for fear concerning the safety of the Hump air route.[50]

The final phase of the Burma offensive began with skirmishes east of the Irrawaddy by NCAC and with important gains by the Four-

* See Vol. IV, 492.

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teenth Army between Pauk and Pakokku. At first, General Slim had hoped to force the enemy to accept battle in the Shwebo plain, north of Mandalay between the Irrawaddy and Chindwin rivers. But General Kimura knew better than to be caught in that trap. Chiefly dependent upon the strength of his Fifteenth Army, a force exhausted by its continuous fighting withdrawal from Imphal, he held the Shwebo plain only long enough to cover his retreat across the river to the high and wooded banks along the eastern and southern shores of the Irrawaddy. Since General Slim lacked the strength to force a crossing against strong positions, he decided upon a landing some distance to the north of Mandalay as a feint to draw enemy attention from the region south of the city where he intended to make the main crossing.[51]

These moves were carefully prepared. Headquarters of the Fourteenth Army and of the 221 Group were moved in January from Imphal to Kalemyo, where a joint army-air headquarters was established to insure proper coordination between the ground forces and supporting air units. Realizing that the enemy would offer every resistance to the Allied advance across the Irrawaddy, General Slim made special arrangements with Stratemeyer for additional air support by the Tenth Air Force, the 224 Group, and the Strategic Air Force.[52]

The first crossing of the Irrawaddy was made about sixty-five miles north of Mandalay at Thabeikkyin. The Japanese nervously began to concentrate forces in that direction, fearful that an attack might be made by 36 Division coming from the region of Mogok. Meanwhile, with 2 Division stationed directly opposite Mandalay, 20 Division made another crossing farther to the west. As the powerful 4 Corps prepared for the showdown, feints were made by the Indian 7 Division and the 28 Brigade at Pakokku and Chauk, between which the Indian 7 and 17 Divisions, the main force, crossed at Nyaungu between 13 and 18 February. After a few days devoted to consolidating positions on the eastern bank, 17 Division, spearheaded by 254 Tank Brigade and with all the motor transport available, struck east across Burma for the region of Meiktila and the rail junction of Thazi. On 27 February the first of the airfields around Meiktila was taken. As soon as the field was made serviceable, C-47's of the 1st and 2d Air Commando Groups flew in a brigade of the British 17 Division from Palel. The move virtually surrounded the main body of Japanese

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forces in the Mandalay area, and the great battle which the Allies had sought and the Japanese dreaded was opened with the whole of southern Burma as the prize.[53]

After the city of Meiktila was taken on 4 March, the Allied forces closed in on Mandalay from all sides. By 9 March the city was surrounded and the siege began. It was expected that the enemy would hold to the last Mandalay Hill, the dominant feature of the area. The second strongpoint was Fort Dufferin, an old fortress of the classic type with extraordinarily thick walls of stone and earth. The resistance offered by the Japanese at the hill was less than expected, and after two days of fierce fighting it was abandoned to the Allies. But at Fort Dufferin the Japanese held on stubbornly. On 11 March, after 5.5-inch howitzers breached the north wall with concentrated fire, a battalion tried to storm the opening. Casualties were heavy and the assaulting troops retired: it was evident that a frontal attack on the fortress would be costly: thus, during the night of 16/17 March two battalions, supported by two machine-gun companies, struck suddenly against the north wall in an attempt to take the stronghold by surprise. When this effort also failed, it became apparent that since the available artillery fire was not sufficient to breach the wall and previous air bombing had failed to speed the fall of the fort, some special air effort should be tried.[54]

On 15 March 10 Thunderbolts dispatched by the 224 Group had dropped 14 tons of bombs on the northwest corner of the fort; the next day, the 221 Group knocked 3 gaps in the southeast corner with 13 tons of bombs; on 17 March 9 Thunderbolts of the 221 Group breached the north wall; and 2 days later B-25's of 12th Bombardment Group breached the north wall again with 2,000-pound bombs. On 20 March the final aerial assault began. Thirty-five B-25's of the 12th Group dropped 104 x 500-pound and 262 fragmentation bombs, followed by Hurricanes of 221 Group which bombed and strafed the entire fort. Thunderbolts, each carrying two 500-pounders, finished off the job. At the end of an hour 130,000 pounds of bombs had broken the walls in 26 places. Attacking through the smoke and dust of the last explosions, the ground forces took the fort without difficulty, and the way was open for the occupation of Mandalay.[55] The fall of the city was followed by the rapid expulsion of all enemy forces in the triangular area between the railway and the Irrawaddy River. Rangoon was the next objective.

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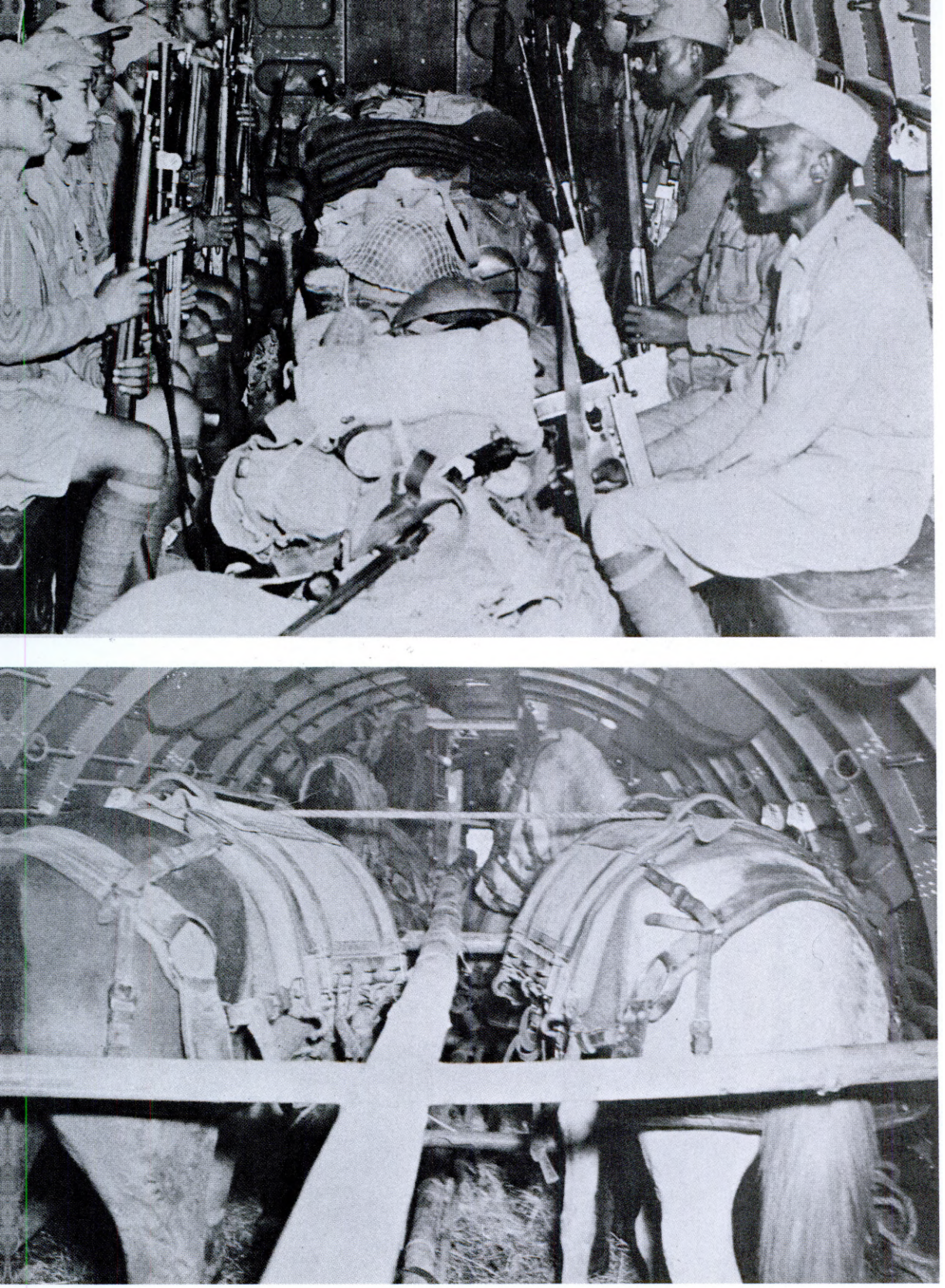

OPERATION *GRUBWORM*, DECEMBER 1944

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FOURTEENTH AIR FORCE BASES

Above: Runway at Liuchow

Below: Abandoning Hengyang

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On 22 March, while the Japanese were still withdrawing from the triangle, Allied leaders met at Mon-ywa. Despite the victory at Meiktila and Mandalay, General Leese pointed out that his armies were still so far behind schedule that he doubted the possibility of reaching Rangoon before the monsoon. This was disturbing news, especially to the Americans who had reckoned with confidence upon an early termination of the Burma campaign.[56] On 25 March Leese recommended that plans should be made immediately for a modification of the amphibious attack on Rangoon as the only means of guaranteeing the fall of the port before the monsoon.[57]

The need to take Rangoon prior to the monsoon is easily understood if one appreciates the extent to which the Allied forces, with an extended line of communication, depended upon air supply. During the month of March six full British divisions, two tank brigades, and two independent infantry brigades on the Fourteenth Army front in central Burma, and three Chinese divisions, one British division, and an American brigade on the NCAC front in northeast Burma were maintained in offensive action almost entirely by air supply. In addition to these divisional troops, three corps headquarters and one army headquarters with attendant army and corps troops, together with most of the Tenth Air Force and practically all of the 221 Group were also on air supply. Personnel totaled approximately 300,000 men, and at least 90 per cent of their supplies and equipment was flown in by C-46's and C-47's. The evacuation of wounded was handled almost entirely by air and substantial reinforcements were flown in daily. Total airborne tonnage for the Fourteenth Army during March reached approximately 70,000 tons and another 26,000 tons were brought in for NCAC. This was twice the ATC Hump lift for China during the same period. The Fourteenth Army was advised about the middle of March that as it advanced to the south and away from existing air transport bases, the tonnage which could be carried to the forward area would necessarily decrease. Nevertheless, the Eastern Air Command committed itself to maintain an average daily lift of 2,000 tons until the fall of Rangoon, on the understanding that the seaport would be taken prior to the monsoon.[58] Admiral Mountbatten decreed that an amphibious landing should be made in the vicinity of Rangoon to make contact with the armies coming down from the north before the outbreak of monsoon storms, and D-day for DRACULA was set for 2 May.[59]

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Actually the operation consisted of three parts: the continued advance of the armies southward from Mandalay, the employment of paratroopers, and the use of a strong naval force in a supporting amphibious assault. During April the columns of the Fourteenth Army continued to advance toward Rangoon, supported as always by air. Even though the weather began to turn bad, 84,822 tons of supplies were transported into or within Burma by all air agencies during April. By 1 May the army spearheads coming down the Sittang and the Irrawaddy valleys were at Pegu and Prome, the first 40 miles and the second 150 miles from Rangoon.[60] Meanwhile, British naval units assembled at Trincomalee in Ceylon. A covering force sailed from there for the Andaman Sea on 27 April and maneuvered off the coast of Malaya for a week. A destroyer force sailed the same day for the Gulf of Martaban. A carrier force had left Trincomalee on 23 April for rendezvous with the Navy transports in the vicinity of Akyab and Kyaukpyu, and together they sailed on 30 April for the estuary of the Rangoon River.[61]

In preparation for the air phase of DRACULA, the 317th and 319th Troop Carrier Squadrons, augmented by ten aircraft from the U.S. 2d and 4th Combat Cargo Squadrons, had moved to Kalaikunda for modifications and training during the latter half of April.[62] Between 26 April and 2 May the Strategic Air Force delivered pulverizing attacks on gun emplacements and troop concentrations within the Rangoon area, especially along the banks of the Rangoon River.[63] On 29 April the paratroop force of 800 Ghurkas with their Canadian jumpmasters was flown by the troop carriers to Akyab, whence they would take off for the drop at Rangoon. Plans for fighter cover by four squadrons of the two air commando groups having been completed, at 0230 hours on 2 May 1945 two Pathfinder aircraft took off for a final check on the weather. Though they found cloud and rain along the way, the target was clear. A thunderstorm swept the field at Akyab as the thirty-eight transports assembled for the flight to Rangoon, but there were no mishaps and the jump began at 0633, three minutes behind schedule. The paratroops landed at Elephant Point, about twenty miles south of Rangoon,* encountering no opposition and reporting only eight minor injuries. They experienced no trouble in their advance inland. Reinforcements and supplies were delivered during the afternoon. At 1130 hours Group Captain Grandy, flying

* Not to be confused with the Elephant Point near Akyab.

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over the city, observed a sign painted by Allied POW's on the roof of the Rangoon jail: "Japs gone." He landed his plane at Mingaladon airfield and entered the city without difficulty.[84] That afternoon the British 15 Corps disembarked from landing craft of the British Navy on both sides of the Rangoon River. The next day, 3 May, the paratroopers and 15 Corps occupied Rangoon and advanced north to make contact with the army column marching in from Pegu. Although numerous pockets of enemy resistance in the north still had to be cleaned out, for all practical purposes the Burma campaign was over.

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CHAPTER 9

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VICTORY IN CHINA

WHEN Lt. Gen. Albert C. Wedemeyer arrived in China as Stilwell's successor on 31 October 1944, he immediately assumed the duties of chief of staff to the Generalissimo and of Commanding General, United States Forces in the China Theater. He was faced with many grave problems, some of which were long standing, while others, the more pressing ones, resulted from the Japanese victories of the preceding summer months. As Wedemeyer saw it, the original Japanese strategy, based upon the maintenance of an outer zone of defense in the Pacific by naval and air power, had been invalidated by the MacArthur-Nimitz advance, and an alternative plan, which called for an inner zone of communications to be defended by ground, sea, and air forces, was now being implemented. Within this zone, the Japanese proposed to maintain two major lines of communication between the home islands and their southern possessions—an inland corridor of rivers, canals, roads, and railways on the Asiatic mainland and, of secondary importance, a coastal waterway protected by naval units and land-based air power.[1]

Wedemeyer believed that the enemy in his summer campaign, by definitely limiting the capacity of the Fourteenth Air Force to interfere, had gone far toward reaching his strategic goal.[2] The Japanese offensive driving south from Hankow had taken Kweilin before Wedemeyer's arrival in the theater. On 11 November, less than two weeks after he had assumed his new duties, Liuchow fell, and the Japanese forces coming from the north were clearly moving toward a junction with the troops advancing westward toward Nanning from Canton. On 24 November the Japanese captured Nanning, and this success was soon followed by the establishment of overland communications with

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Indo-China. By the end of November, therefore, the major airfields of the Fourteenth Air Force had been occupied and communications between Manchuria and southeast Asia had been established. That the enemy would defend this new line of communications with utmost tenacity was not questioned. It was also believed that he would not remain quiescent in his "mole's tunnel" between Kaifeng and Hanoi, but would try either to burrow on toward Kunming or to push westward past the Yellow River bend toward Chengtu—it was even possible that the enemy might attempt both of these drives at the same time. Success in either of the moves might eliminate China from the war.

General Wedemeyer felt that the first contingency, the drive against Kunming, was the more likely move, and he made his plans accordingly.[3] The five months between 1 December 1944 and 30 April 1945 were to be dedicated to strategic defensive actions: Chinese troops were to be returned to China from Burma, additional Chinese troops in China were to be trained and equipped for combat, and the Fourteenth Air Force was to continue its counter-air activity and bombing attacks on enemy communications. Beginning on or about 1 May 1945, it was hoped that a powerful Chinese-American offensive could sweep the Japanese back toward Manchuria, sever the newly established line of communications, and force an evacuation of southeast Asia.[4]

Operation GRUBWORM

On 29 November 1944 Chiang Kai-shek and Wedemeyer informed the Combined Chiefs of Staff and the Supreme Allied Commander, Southeast Asia, that a large part of the Chinese troops fighting with the Allied forces in Burma was needed in China.[5] With the consent of the CCS[6] but over the protest of Admiral Mountbatten, Wedemeyer then called for the transfer from Burma to China of the Chinese 14th and 22d Divisions.[7] In addition to the two Chinese divisions, which Southeast Asia Command finally agreed to give up,[8] Chinese Sixth Army Headquarters, one heavy mortar company, one signal company, and two portable surgical hospitals were eventually included in the movement, which was made by air. The operation, coded GRUBWORM, was placed under the direction of the Tenth Air Force with that organization's deputy chief of staff, Col. S. D. Grubbs, in charge.[9] Although GRUBWORM sometimes seemed like an operation for the movement of "an unknown amount of cargo, with an indefinite num-

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ber of aircraft, to an undetermined number of air bases,"[10] the plans for the transfer had to remain unusually flexible.

It was essential for the movement to be executed with the least possible interference with normal transport and combat operations then developing in Burma. Fortunately, the initial success which attended the Allied drive in Burma eliminated any necessity for the provision of fighter escort. Only a few combat aircraft from the Tenth Air Force were required to protect the fields from which take-offs were scheduled. Eastern Air Command transferred the 317th and 319th Troop Carrier Squadrons of the air commando groups to Myitkyina North, under the operational control of the Tenth Air Force for the duration of the troop movement, and the Air Transport Command furnished an additional contingent of aircraft to assist the operation. In this way no great strain was placed upon the Tenth Air Force, and General Davidson was enabled to continue his indispensable airlift to the ground forces advancing toward Mandalay.[11]

Operation GRUBWORM was carried out from five airfields in Burma—Myitkyina North, Sahmaw, Warazup, Nansin, and Myitkyina South—and from Ledo in Assam. Four of these six airfields had been constructed only within the previous two months by Tenth Air Force engineers, working directly behind the retreating enemy; the fifth field, Nansin, was completed the day before GRUBWORM began. At Nansin the transports were loaded so close to Japanese artillery that in one instance the take-off of a battalion was delayed while the troops searched the area for snipers.[12] The whole operation was completed in a surprisingly short time: the first of the heavily laden transports rose from the Burma fields and headed toward China on the morning of 5 December 1944, and the last of the transports emptied its cargo on Chinese runways on 5 January 1945—exactly a month after the beginning of the operation. Actually, the total number of flying days was twenty-four, for a momentary improvement in the situation on the Chinese front brought a suspension of the operation from 16 through 22 December.

To provide for the administrative needs of GRUBWORM, the Northern Combat Area Command stationed a small, efficient group of personnel at each of the fields from which the transports were to take off. These officers and enlisted men, in cooperation with regularly assigned air personnel, followed prescribed methods in performing the chores which made the operation function smoothly. When troops arrived for transportation to China, they were quartered as near

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as possible to the take-off field and were provided with food, water, and shelter, a ministration not without its difficulties. Every twenty-four hours the Tenth Air Force reported to NCAC Headquarters the number and type of aircraft that would be available at each field for the next day's haul, and this information was passed to the NCAC groups at the five fields. The encamped Chinese troops were then divided into planeloads consistent with the type of aircraft in which they were to fly, and every attempt was made to keep the rations, equipment, and ammunition intact with the proper unit. As the empty planes were made ready, they were loaded by ground personnel, although each pilot determined the load he would carry and directed the placement of the cargo within the plane.[13] Since the Chinese equipment depended upon the use of hundreds of draft animals, specially trained personnel were needed to load the animals aboard the planes. The responsibility for flying them across the Hump was delegated to the commandos who had a constant number of planes available each day.[14]

The 1348th AAF Base Unit of ATC's India-China Division, located at Myitkyina South under the command of Lt. Col. Frank Thornquest, acted as the coordinating and operational center for all ATC planes and for the China-based combat cargo aircraft flying out of Suyung. To transport the Chinese 14th Division, ATC used C-46's based in Assam and at Luliang; for the 22d Division, ATC used C-47's based at Chanyi, Kunming, and Chengkung, as well as the China-based combat cargo C-47's.[15] Inasmuch as ATC operated on a twenty-four-hour schedule with planes based in China as well as in Assam, its participation in GRUBWORM was more complicated than that of the commandos or the Tenth Air Force. To maintain continuous operations, crews were changed at the end of each round trip, and since some of the pick-up fields were not operational at night, commando and Tenth Air Force combat cargo planes, assisted by troop carrier C-47's when required, shuttled the troops to Myitkyina South during the day to fill the complements for night flights to China.[16] Although there were exceptions to the rule, ATC procedures usually followed Tenth Air Force instructions: 1) crews already familiar with the pickup fields were selected for use in GRUBWORM; 2) crews were briefed and transports gassed at Myitkyina South; 3) the planes then flew to the designated field for pickup; 4) once loaded, the transports returned to Myitkyina South for refueling, unless the pickup field had adequate refueling facilities; 5)

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the transports took off for China, calling the ATC tower at Myitkyina South on their way east; and 6) on return flights, the crews of the transports contacted the Myitkyina South tower again for instructions.[17]

Altogether, GRUBWORM required 1,328 transport sorties, of which ATC accounted for 597, the air commando squadrons for 488, and Tenth Air Force for 243. At the close of the operation, which must rank as one of the major transport achievements of the entire war, a total of 25,095 Chinese soldiers had been moved by air from Burma to China.[18] In addition, the lift had included 396 American soldiers, 1,596 animals, 42 jeeps, 48 x 75-mm. howitzers, 48 x 4.2-mm. mortars, and 48 A/T guns.* Throughout the operation the weather was very unfavorable, and in many cases the crews were new to the Hump even though familiar with the pickup fields. Nevertheless, only three planes were lost: two of the 317th Troop Carrier Squadron's transports crashed into the first ridge of mountains crossing the route from Myitkyina to China, and one aircraft belonging to the 10th Combat Cargo Squadron disappeared, its fate unknown.[19] All in all, the achievement was nothing less than spectacular.

On their arrival in China, the GRUBWORM soldiers became the nucleus of a larger force being organized, trained, and equipped by Wedemeyer during the winter of 1944–45. The troops were located in the general vicinity of Kunming, where they were meant to serve as a defense force in case this Chinese "port of entry" were threatened. Fortunately, the enemy did not immediately turn his attention to the west. Instead, he determined to eradicate the last strongholds of the Fourteenth Air Force in east China, and that decision gave Wedemeyer an opportunity to prepare for his own offensive.

Fourteenth Air Force Operations

While General Wedemeyer pushed preparations for an attempt to seize the initiative in China, the immediate combat burden fell

* The breakdown of personnel moved is as follows:

Unit	*Chinese Soldiers*	*American Soldiers*
14th Division	10,504	84
22d Division	12,122	119
Sixth Army	881	12
1st Heavy Mortar Regiment	1,588	17
45th Post Surgical Hospital		30
60th Post Surgical Hospital		28
988th Signal Company		106

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heavily on the planes and crews of the Fourteenth Air Force. This was a familiar story in China, but the Fourteenth Air Force, except for the loss of its key bases in eastern China, now enjoyed the advantage of unprecedented and growing resources. Whether considered in terms of manpower, planes, supplies, or fuel, Chennault's force had steadily increased in strength over the preceding months and was still growing.

In January 1944 the Fourteenth Air Force had a total personnel strength of 5,758, of whom 1,520 were officers and 4,238 were enlisted men. Figures for the period from October 1944 to June 1945 are as follows:[20]

Month	*Officers*	*Enlisted Men*	*Total*
October	2,958	13,229	16,187
November	2,728	14,245	17,473
December	3,495	14,726	18,221
January	3,686	16,623	20,309
February	3,781	17,650	21,431
March	4,122	19,042	23,164
April	4,225	20,370	24,795
May	4,360	22,000	26,360
June	3,418	22,173	26,594

In January 1944 the air force had 194 fighters, 38 medium bombers, and 50 heavy bombers; for the 9-month period beginning in October of that year, the totals were:[21]

Month	*Fighters*	*Medium Bombers*	*Heavy Bombers*
October	457	105	45
November	535	109	47
December	510	105	56
January	520	94	70
February	521	92	56
March	564	99	65
April	525	103	69
May	500	117	69
June	483	127	65

Deliveries of fuel and supplies kept pace with this build-up, as the following table of ATC tonnage delivered to China shows:[22]

Month	*Total*	*Assigned Fourteenth Air Force*
October	24,715	13,014
November	34,914	14,792
December	31,935	16,578
January	44,099	23,888
February	40,677	21,730
March	46,545	22,355
April	44,254	21,095
May	46,394	18,207

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After the reconquest of Burma in May 1945, Hump tonnage rose to the unprecedented totals of 55,386 tons in June and 71,042 in July. Although the stream of supplies to China during the last few months of the war was further increased* by the opening of the Ledo Road all the way in February 1945, the total delivered via Ledo Road through May, including the weight of trucks not returned to Burma, did not equal the tonnage hauled to China by ATC during the single month of June 1945.[23] Until the summer of 1945 China remained primarily dependent upon air transport for the sustenance of military operations.

In November 1944 the Fourteenth Air Force consisted of thirty-six combat squadrons,[24] grouped under the 68th and 69th Composite Wings, the Chinese-American Composite Wing, and the 312th Fighter Wing.[25] The 69th Composite Wing was composed of the 51st Fighter Group (the 16th, 25th, 26th, and 449th Fighter Squadrons) and the 341st Bombardment Group (M), consisting of the 11th, 22d, and 491st Bombardment Squadrons; with headquarters at Kunming, its mission was the defense of the Hump route and southwest China. The 68th Composite Wing, made up of the 23d Fighter Group (the 74th, 75th, and 76th Fighter Squadrons) and the 118th Tactical Reconnaissance Squadron, was given the job of supporting the Chinese ground forces along the Hankow-Canton railway, interdicting enemy lines of communication in south and southeast China, and maintaining a counter-air campaign. The Chinese-American Composite Wing was composed of the 3d Fighter Group, the 5th Fighter Group, and the 1st Bombardment Group(M), each with four squadrons; it had as its combat area central China, especially the regions south of the Yellow River and immediately west of the Ping-Han Railway, and as far east as the Nanking-Shanghai area. The 312th Fighter Wing, made up of the 311th Fighter Group (528th, 529th, and 530th Fighter Squadrons) and the 81st Fighter Group (91st and 92d Fighter Squadrons), had once been limited to defense of the Chengtu airfields,† but by

* Short tons delivered by Ledo Road are indicated in the following table:

Month	*Wt. of Trucks*	*Wt. of Supplies*	*Total*
February	4,120	1,111	5,231
March	5,279	1,509	6,788
April	11,249	4,198	15,447
May	19,645	8,435	28,080
TOTALS	40,293	15,253	55,546

† See above, p. 118.

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the end of 1944 its mission was defined as the interdiction of the Tungpu, Ping-Han, Lung-Hai, Tsingpu, and Suiyuan-Peiping railways. In order to carry out this mission more effectively, the 490th Bombardment Squadron (M) was later placed under the operational control of the 312th Wing, and in February 1945 three squadrons of Liberators were also assigned to it.[26]

In a way, the 69th Composite Wing was somewhat cut off from the critical operations in China during the last two months of 1944 and the first six months of 1945. The wing's primary mission was in French Indo-China and that part of Kwangsi Province which lies south of the 24th parallel and west of the 110th meridian. Since it was also assigned to defend the Hump route, the 69th Wing supported the British in the last phases of the Salween campaign and the reoccupation of central Burma by sending into Burma Mustangs taking off from Salween bases; having dropped their bombs, the planes went on to Tingkawk Sakan where they reloaded and then took off to bomb another target in central Burma on their way back to China. After the occupation of central Burma, the 69th Wing devoted most of its attention to interdiction in Indo-China, giving generous support to the resisting French along the Yunnan border.[27]

Although the new power of the Fourteenth Air Force heightened the tempo of combat at the very time when the enemy appeared to be victorious everywhere in China,* the Allied airmen fought at a decided disadvantage. Not only had the enemy extended his corridor southward from Hankow, overrun the airfields at Hengyang, Kweilin, Liuchow, and Nanning, but he also surrounded and besieged the more easterly fields at Suichwan, Kanchow, Namyung, and Kukong, together with such staging strips as that at Kienow. Within that area a Chinese army of some 150,000 poorly equipped troops under Marshal Hsueh Yo continued to fight. For their assistance and in the hope of holding the airfields east of the Japanese corridor, Chennault in November organized the East China Air Task Force. Under a plan of operation designated STRONGPOINT, he divided the 68th Com-

* The impetus is clearly shown in the following table, which lists the number of sorties flown by aircraft of different types:

	1944				*1945*					
	Jan.	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*
Fighters	537	4,054	3,288	3,278	2,822	1,833	3,256	3,592	3,546	1,735
Mediums	106	263	471	465	262	216	594	529	498	329
Heavies	370	757	644	770	656	249	478	384	988	486

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posite Wing: the 75th and 76th Fighter Squadrons remained west of the corridor, while the 74th Fighter Squadron and the 118th Tactical Reconnaissance Squadron were located east of it. These two squadrons were strengthened by a detachment of Liberators from the 308th Bombardment Group (H), the 21st Photographic Squadron, and a few transports. The task force was thus a small but versatile and effective unit.[28]

As always in China, the main problem of the task force was supply.[29] To keep the transportation requirements as low as possible, every effort was made to cut down the tonnage used: the fighter and reconnaissance squadrons were allowed less than 100 men each, although their T/O's called for 250, and the B-24's were denied the "luxury" of ground crews. In this way it was estimated that the task force could operate on as little as 1,100 tons monthly, and it was hoped that an additional 1,000 tons monthly could be supplied to the Chinese armies. That meant that a total of at least 2,100 tons each month had to be flown from Chihkiang, across the Japanese corridor, to Suichwan and Kanchow; from there the supplies could be taken by motor transport across the dry-weather roads to Marshal Hsueh's troops and to airfields within the enemy-surrounded area.[30]

On 12 November 1944 the first units of the East China Air Task Force reached Suichwan, and one week later Operation STRONGPOINT began when two B-24's took off on a reconnaissance flight.[31] Already the enemy had begun to concentrate troops near Cha-ling and Anjen, eighty-five miles northwest of Suichwan, and this move suggested that the Japanese planned to overrun the remaining eastern airfields before venturing westward toward Kunming and its neighboring fields. On 15 January 1945 the Japanese struck along the Cha-ling-Lienhwa road. Meanwhile, the Fourteenth Air Force was finding it impossible to get 1,000 tons of ground supplies to the Chinese troops every month, not because of any failure on the part of transport services, but because the Chungking government obstinately refused to release the required materiel for the use of Hsueh Yo. This provoked some justifiably harsh comments among Fourteenth Air Force personnel concerning the real intentions of the Kuomintang. Naturally, under such unfavorable circumstances, the forces of Hsueh Yo had no choice but to retreat. For the first few days of battle, the weather was good, and the task force gave the Chinese infantry sufficient support to limit the Japanese to nightly advances. Then the weather

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changed to make flying practically impossible at the altitudes needed for ground support, and the enemy took up his march in earnest. On 27 January Suichwan was occupied; Kanchow fell on 7 February. Meanwhile, a Japanese drive northward along the line of the Canton-Hengyang railway met only crumbling resistance as Kukong and then Namyung were lost. By mid-February the only field left was Changting, and Operation STRONGPOINT was over.[32]

Despite this early disappointment, the East China Air Task Force had made a valiant effort. Within the general vicinity of the STRONGPOINT operations, the enemy had been conceded to have overwhelming air superiority—perhaps as many as 160 bombers and 400 fighters.[33] These enemy planes remained, however, remarkably inactive, perhaps because the Japanese lacked an adequate warning system. Time and time again the Americans swept over their airfields, strafing planes parked wing to wing, and met little or no opposition. The mission strength of the Americans was never very great, usually half of the planes being used for cover; they were free to strafe only after the initial attack had been delivered. All told, 747 sorties were flown by the two fighter squadrons and 110 tons of bombs were dropped. The East China Air Task Force claimed that as many as 312 enemy planes had been destroyed or damaged. AAF units lost no aircraft in aerial combat, but fifteen Mustangs were shot down by ground fire and thirteen planes were lost to other causes.[34]

These counter-air operations by the East China Air Task Force, while serving the immediate end of protecting the Chinese ground forces from interference by enemy planes, were also part of a general effort by Fourteenth Air Force units to keep the enemy air force pinned down throughout China. It was hoped that the attempt to gain complete aerial supremacy would give substantial assistance in holding the Japanese armies within their established lines, and that the Fourteenth Air Force at the same time could thus contribute to the Allied effort in the Pacific—an effort now reaching into the Philippine Islands.[35] All of Chennault's command in some measure shared in the offensive, but the 312th Fighter Wing, now free of the responsibility for defense of the B-29 bases at Chengtu, played an especially active part. Situated west of the corridor at Sian, under the command of Brig. Gen. Russell E. Randall, the 312th's Mustangs between November 1944 and the end of February 1945 raided, among others, enemy fields at Puchou, Yuncheng, Linfen, Sinsiang, Anyang, Shih-

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chia-chuang, Tsinan, Suchow, Chuchiatai, and Peiping.[36] The missions often involved operational hazards for the Fourteenth's airmen, but the Japanese air units added little to the difficulty. Whether because the better-trained and -equipped enemy units were committed to the hard fighting of the Pacific area or for some other reason, Japanese reaction in the air was largely confined to night attacks, never in great strength, against Allied airfields within the east China pocket. During November and December the Japanese bombed Suichwan twelve times with a grand total of seventy-four planes; Kanchow was hit eight times by a total of thirty-four planes. The bombings brought serious damage—6 fighters, 3 B-24 tankers, and 4,000 gallons of fuel were destroyed—but the effect on East China Air Task Force operations was slight.[37]

To restrict further Japanese expansion, the East China Air Task Force put interdiction of enemy communications in second priority after its counter-air activity. Although the interdiction strikes were constant, the scale of operations was limited by the small size of the force—one which counted as a "big show" the sixteen planes sent against Nanking and the thirteen against Hankong on 8 December 1944. Some assistance did come from the B-29's when on 18 December they delivered a devastating attack on Hankow.* Throughout January 1945 the 5th Fighter Group of CACW staged daily raids against the ammunition dumps of Hankow and Wuchang, and by February the enemy air force was so well in hand as to permit a concentration by most Fourteenth Air Force units on the interdiction program. The purpose was to cut down the supplies going to the Japanese Army, to disrupt its administration of the conquered provinces, and to prevent the development of effective overland communications with the southern parts of the Empire.[38] Consequently, railway lines, locomotives, bridges, rolling stock, highways, canals, rivers, and motor vehicles became the chief targets. Thunderbolts struck bridges along the southern Tungpu and swept railroads and highways; Mustangs went against the Ping-Han bridges and, their range extended by wing tanks, carried their attacks against locomotives along the Tsingpu; night fighters took over after dark.[39] Within a month intelligence reported that 142 locomotives had been destroyed and 37 bridges rendered temporarily unserviceable.[40]

* See above, pp. 143–44.

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Intelligence also indicated that damaged locomotives had been hauled into north China for repair, especially at the repair depots located near Shih-chia-chuang, Anyang, Sinsiang, Tsinan, and Cheng-hsien. Accordingly, three squadrons of the 308th Bombardment Group's Liberators were taken off coastal sweeps and placed under the operational control of the 312th Fighter Wing for strikes against these repair centers.[41] On 9 March 1945 thirty-one Liberators, with a fighter escort of twelve Mustangs from the 311th Fighter Group, took off from Hsinching and Kwanghan to strike Sinsiang. Photographs of the bomb patterns showed that the tracks leading into and from the marshalling yards had been buckled, that seventeen warehouses had been destroyed, and that seven locomotives had been damaged and possibly destroyed.[42] A similar raid against Shih-chia-chuang, flown on 16 March, resulted in comparable destruction.[43] On 23 March 28 Liberators, escorted by 16 Mustangs, attacked the Tsinan yards and a Yellow River bridge which ordinarily carried a daily supply traffic of 3,000 tons; the Tsinan yards and shops were smashed and the bridge seriously damaged.[44]

By the end of March, however, it was realized that the heavies were no more efficient than fighters in maintaining the interdiction program and, therefore, that the greater fuel consumption of the larger planes was not justified. Consequently, in April the heavy bombers of the 308th Bombardment Group were transferred to India for supply operations over the Hump.[45] Even so, it became necessary to limit the fighter attacks, too, in order to conserve fuel. As a compromise, it was decided to restrict missions to the Tsingpu bridge and to points along the railway from Shih-chia-chuang to Hankow. To keep the efficiency of interdiction at a high level, the Fourteenth Air Force drew up a list of bridges within the assigned area of responsibility of each wing and gave an order to keep a definite number impassable at all times.[46] In general, the fighters of the 312th Fighter Wing, the Chinese-American Composite Wing, and the 68th Composite Wing were used against the bridges, and the medium bombers were used only for the most strongly built structures, for railway marshalling yards, and locomotive repair facilities.[47] Meanwhile, the 341st Bombardment Group and the 51st Fighter Group performed similar tasks in French Indo-China. From March through May 1945 the damage inflicted was heavy enough to interrupt permanently the traffic from Vinh to the

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China border. By June, with three bridges unusable within a distance of forty miles, the Japanese abandoned rail transportation and turned to motor vehicles.[48]

Although counter-air activity and the railway interdiction program claimed the first attention of the Fourteenth Air Force, attacks on Japanese shipping were continued in so far as resources permitted. Between late November and the end of January claims of enemy shipping sunk reached a total of 73,850 tons, but this would appear to be an overoptimistic estimate, for the antishipping program is represented by only 37 heavy bomber sorties and 25 medium sorties.[49] At times fighters supplemented the bombers, especially in attacks directed against targets on the Yangtze, in Formosa Strait, and at Shanghai and Hong Kong. These and other operations continued to suffer from the limiting effect of fuel shortages. Although deliveries over the Hump reached new records in the winter of 1944–45, consumption also reached new peaks and problems of distribution from Kunming to other airfields remained difficult.[50] For example, at the end of the first week in January, the field at Kanchow had only 400 gallons on hand and Suichow only 950.[51]

Despite supply difficulties and the loss of the east China airfields, the Fourteenth Air Force continued to punish the enemy. With the airfields in north China at Sian, Laohokow, Ankang, Hanchung, and Liangshan expanded and strengthened, Yangtze River targets received such close attention that the Japanese on 21 March struck southwest from Lushan to try to overrun the northern airfields. At the same time, a column swept north along the Han River valley to provide a pincer movement against Laohokow. Lacking air cover, the enemy columns moved by night against only slight resistance by the defending Chinese ground forces. On 25 March the installations at Laohokow were destroyed by the Americans and all personnel were evacuated.[52] Sian and Ankang were next in line for Japanese occupation, but Chinese resistance stiffened into a stubborn defense, and the Fourteenth Air Force provided excellent support. Bomb-carrying fighters from Sian and Ankang struck repeatedly against bridges and concentration points along the enemy's route of march and kept patrol over the enemy's road and river lines of communication. The 312th Fighter Wing concentrated its attacks north of the Yellow River, while CACW struck on the south. The 311th Fighter Group, the 81st Fighter Group, the 426th Night Fighter Squadron, and

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CACW's 3d Fighter Group and 1st and 2d Bombardment Squadrons went all-out. During April ground controllers directed the pilots to their targets as the enemy took refuge in caves, foxholes, and bunker positions along the hills and in the villages. Laohokow was the last Chinese field to be surrendered.[53]

Meanwhile, on 10 April the enemy began another offensive, a drive aimed at the Chihkiang air base, which controlled the vital Hsiang valley. Its capture would lay open Kweiyang, and thus the approaches to Kunming and Chungking.[54] The Japanese began their drive from Paoching, with three flanking movements in support. The first was from Yuankiang, 180 miles northeast of Chihkiang, and led to the occupation of Yiyang. The second flank movement, toward Sinhwa, began with a strong show of force but within five days dwindled to unimportance. The third came from Tunganhsien and took Sinning, at which point the offensive split into two columns—one drove almost as far as Wawutang, fifty-eight miles from Chihkiang, and the other got as far as Tangchiafang. The two columns then joined the main drive west from Pao-ching.[55]

The Japanese threw into this new offensive approximately 60,000 troops. The Chinese had 100,000, a numerical advantage which heretofore had not been sufficient to offset the superior equipment and training of the enemy. But this time the enemy found himself opposed by forces which were regrouping and re-equipping in accordance with Wedemeyer's plan to seize the initiative in China. Of chief importance was the Chinese Sixth Army, trained in Burma and flown back to China the previous autumn. For air support there were the 5th Fighter Group and the 3d and 4th Bombardment Squadrons (M) of CACW, and preparations for improvement of air-ground techniques were well advanced. Eight air-ground liaison teams, though some of them had not completed their training, were rushed to the battle area on 20 April. Each team was composed of one officer and two enlisted men whose duty it was to maintain as nearly as possible uninterrupted contact with the enemy; with the aid of panels and radios they directed fighters and bombers to the targets, many times at the request of Chinese commanders. These requests were relayed to a central control station at Ankang, where an air liaison officer filtered the information for transmission to the operating air units. After some experience, most of the requests were made directly from front-line air-ground stations to 5th Fighter Group Headquarters.[56]

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The .50-caliber machine gun proved to be the most important single weapon used in support of the Chinese ground forces. The 5th Fighter Group alone fired an average of 1,800,000 rounds a month during the nearly 2 months of battle. For the most part, Japanese forces occupied hilltop positions; to strafe effectively, the fighters fired their guns during a 90° dive and did not begin the pull-out until a relatively short distance from the foxholes. Napalm bombs were especially effective as antipersonnel weapons, since they not only penetrated the foxholes but their heat drove enemy soldiers from nearby positions to expose themselves to the fire of the Chinese ground soldier.[57] Despite the usual limitations imposed by inadequate supplies, the 56 fighter aircraft flew a total of 3,101 sorties during the 51 days of the campaign, thus averaging somewhat better than 1 sortie per plane per day. Since there were several days in the course of the campaign when weather prevented flying, it was at times necessary for each pilot to fly as many as four or five sorties on clear days. The medium bombers flew 183 sorties with an average bomb load of 1,040 pounds per sortie.[58]

As a result of the new spirit among the Chinese troops and the close air support given the Generalissimo's forces by the Fourteenth Air Force, the Japanese were decisively defeated in the Chihkiang campaign. By 15 May the Chinese troops were so definitely masters of the situation that the Japanese were in full retreat along the Hsiang valley. And this was the turning point in China. Within a few days it was also evident that the enemy was moving back toward the Indo-China border and that preparations were being made to abandon Liuchow.[59] By June it was quite certain that the Japanese would not try to redeploy their troops south of the Yellow River, and before the end of that month hitherto strongly held coastal positions below Shanghai were being evacuated. There were even signs that the estimated 100,000 troops in the Canton region were also going to be moved out, and by the end of July central China and the China coast were nearly free. There remained the possibility of a tedious fight along the southern boundary of Manchuria, but within another two weeks the enemy government had surrendered. With that surrender, "the China incident" was closed.

There is no evidence to suggest that the failure of the Chihkiang offensive in any way affected the Japanese decision to surrender. The American victory was won in the Pacific, and China remained at the

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close of the war, as she had since the attack on Pearl Harbor, outside the main theater of combat. The enemy's decision to extend his grasp on China came too late to affect the ultimate decision and served chiefly to deny the Fourteenth Air Force the opportunity to play its anticipated part in cutting the enemy's lifeline through the China Sea. That U.S. Pacific forces were able to move speedily to the accomplishment of their purposes in the final phases of the war without substantial aid from China-based air forces is one more comment on the frustration which had plagued the history of AAF operations in China from the beginning of the war. For the men of the Fourteenth Air Force, however, there was the satisfaction of a fight well fought and of postwar testimony by ranking Japanese officers in China that, but for the Fourteenth Air Force, "we could have gone anywhere we wished."[60]

A Final Reorganization

At the end of the war Chennault no longer commanded in China, and plans for a complete reorganization of AAF forces on the Asiatic mainland were being put into effect. These plans had their origins earlier in 1945 in two considerations: the prospect of an early liberation of all Burma, and the desire to use all available AAF resources in Asia for cooperation with U.S. forces in the Pacific as they approached the mainland of China. Termination of the combined Anglo-American effort to expel the Japanese from Burma would re-emphasize the contrasting interests of the United States and Britain. The latter naturally looked southeastward toward the reoccupation of Singapore, but, on the other hand, the United States' primary aim in CBI had from the first been to help China. Strategic plans for the Pacific still rested to some extent upon the assumption that an amphibious landing on the China coast might be a necessary preliminary to the final assault on Japan; such a landing would depend in great measure for its success on an enlarged AAF force in China. Even if the idea of some lodgment on the China coast were wholly abandoned, there would be work enough for China-based planes in operations off the China coast in cooperation with Philippines- or Formosa-based planes of the Pacific air forces.

Before the inauguration of the final offensive in Burma, General Stratemeyer and his staff had looked forward to the dissolution of the Eastern Air Command and the transfer of its AAF components across

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the Hump to China.[61] Such a plan was in accord with AAF thinking in Washington, and by January 1945 Stratemeyer's planners had drafted specific proposals for the redeployment of AAF units from India and Burma to China at the earliest possible time after the liberation of Burma. These proposals, providing for an AAF headquarters in China to command both the Tenth and Fourteenth Air Forces, received the approval of Wedemeyer, Stratemeyer, and Sultan in a conference at Myitkyina on 15 January 1945.[62] After further consideration led to some revision, Wedemeyer was to take the revised version to the Pentagon in person for final approval. Chennault was outspoken against the plan, and when Wedemeyer went to Washington in March he took with him Col. Howard Means as Chennault's personal representative; Maj. Gen. Charles B. Stone III, Chief of Staff, EAC, and several ATC officers also accompanied Wedemeyer.[63] In Washington Colonel Means' chief argument against a great build-up of AAF forces in China was that the increase could not be justified in terms of the available logistical support.[64] His argument was countered by a promise that the Hump lift would be augmented by the allocation of many additional C-54's,[65] and the reaction to the proposed plan in Washington, where preparations for an early concentration against Japan itself were being pushed, seemed altogether favorable.

The special mission left Washington with no written directive, but with the firm conviction that the War Department was committed to the movement to China of Stratemeyer's AAF headquarters and the Tenth Air Force. Before a conference of AAF leaders at Hastings Mill, India, on 9 April 1945, General Stone explained that a plan aimed at the liberation of a China port and establishment of direct contact with the American forces in the Pacific had been approved by the Joint Planning Staff and the Joint Chiefs of Staff.[66] The air phase of the plan, which was based upon the redeployment to China of Stratemeyer's headquarters and the Tenth Air Force, was then explained in detail.

It was anticipated that by July 1945, "sufficient tonnage being available and the United States Army Air Force participation in Southeast Asia Command Operations being terminated, air units of the AAF India-Burma Theater will be deployed to China as required."[67] The Tenth Air Force, already organized along tactical lines, was to be based south and west of Chihkiang for direct support of the Chinese ground forces and for isolation of "the immediate area of the

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battlefield by attacking railway and road lines of communication from Hengyang through Hanoi and down the West River to Canton-Hongkong."[68] The Fourteenth Air Force, organized as a bomber command and based along the Chengtu–Yellow River bend, was to be charged primarily with strategic operations. Coordination of operations with the Far East Air Forces in the Philippines was to be worked out by a new headquarters, the Army Air Forces, China Theater.[69] Stratemeyer, who would head the new organization, was to locate his headquarters close to Wedemeyer's,[70] and although it was agreed that Chinese air units should also come under Stratemeyer's direction, for this the Generalissimo's consent was still to be secured at the close of April.[71]

By that time the campaign in south Burma was racing toward its triumphant end, with the occupation of Rangoon a matter of days. As the Allies closed in on the great port, fewer and fewer aircraft were needed to pursue the broken and hiding foe. Accordingly, plans were made for an early move of some Tenth Air Force units—especially ground personnel—to China, and on 5 May 1945 Wedemeyer gave the necessary authorization.[72] But almost immediately he reversed his decision and informed Stratemeyer that a further study of Hump tonnage indicated the impossibility of receiving the Tenth Air Force in China on an operational basis. Marshall would be informed, but Wedemeyer wished first to offer Stratemeyer the over-all command of a much smaller air force in China with Chennault and Davidson dividing the command under him. General Wedemeyer hoped that the force in time might be built up to a strength commensurate with Stratemeyer's rank.[73] The latter replied frankly that he did not want the job; were the need genuine, he would gladly take any position in China that might assist in winning the war, but he advised Wedemeyer to accept Stone as air force commander and make Chennault, Davidson, and "myself" available for return to the U.S.[74] On 13 May Wedemeyer told Stratemeyer that he was notifying the War Department of his inability to receive the Tenth Air Force, and that same day Stratemeyer in a letter to Arnold explained some of the difficulties.[75] It appeared that the original estimates, especially for ground force requirements in China, had been too optimistic. The difficulties of intra-theater distribution had been underestimated and recent reports on air transport requirements for the deployment of forces in Europe indicated that fewer C-54's would be available for the Hump

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run than had been anticipated. After deactivation of the Eastern Air Command on 31 May 1945, some transport planes and perhaps one heavy bombardment group would be assigned to the Hump route; other cargo planes, together with one fighter group, would be sent to China for use by the Fourteenth Air Force. The Tenth Air Force, presumably, would be liquidated.

The decision to abandon the plan to transfer the Tenth Air Force to China had hardly been made when the situation which had governed the decision began to change. On 16 May Lt. Gen. Ira C. Eaker, Arnold's deputy in Washington, wrote Wedemeyer that in any event Chennault would be replaced as air commander in China.[76] By 22 May a report that the promised C-54's were actually on their way to India revived some hope at Stratemeyer's headquarters.[77] There seems to have been some serious failure in communications between China and Washington, for the War Department quite evidently assumed that plans for the transfer of Stratemeyer and the Tenth Air Force to China would go forward. Early in June Arnold left the United States for a tour of the Pacific,* and he was preceded by orders for Stratemeyer to meet him in Manila.[78] At that conference, held on 16 June 1945,[79] Arnold expressed surprise that Stratemeyer had not yet assumed command in China and informed him that he had recently been promoted to the rank of lieutenant general for that specific purpose.[80]

Arnold was obviously also resolved to avoid any complications arising from the presence of Chennault in China.[81] When Stratemeyer left for China on 17 June, he carried a letter from Arnold to Wedemeyer advising him of the need in China for "a senior, experienced air officer, in whom both you and I have confidence."[82] In view of his recent experience in Burma, Stratemeyer was proposed as one especially well qualified for leadership in "a war of movement, aimed at isolating the Jap in Indo-China and defeating him or at least containing a substantial bulk of his forces in Southern China." The letter continued:

> General Chennault has been in China for a long period of time fighting a defensive air war with minimum resources. The meagerness of supplies and the resulting guerilla type of warfare must change to a modern type of striking, offensive air power. I firmly believe that the quickest and most effective way to change air warfare in your Theater, employing modern offensive thought, tactics and techniques, is to change commanders. I would appreciate your concurrence in General Chennault's early withdrawal from the China Theater. He

* See below, p. 687.

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should take advantage of the retirement privileges now available to physically disqualified officers that make their pay not subject to Income Tax. Otherwise he may be reduced and put back on the retired list at his permanent rank.

I understand that the tonnages which I am largely responsible for making available to you have been substantially allocated to the ground forces, thereby reducing the amount of tonnage available to air. This has resulted in your available air striking power being dissipated from India-Burma and China to other theaters and to the United States. There are no plans which I know of for increasing your air forces at a later date and I therefore recommend that you re-evaluate your present situation and create conditions which will permit the redeployment to China of essential air striking power now available in India-Burma. I feel that if you can do this, the Joint Chiefs of Staff will not object to the additional change in the air plans which will permit you to introduce into China these units, which I feel should be the bulk of those of the Army Air Forces, India-Burma Theater. Any units of the Tenth Air Force which you can program for employment in China can be held in India; the others will be redeployed as soon as we can get shipping.

I trust that in line with my comments above you will be enabled to put into effect the organization which you recommended to the War Department on your recent visit; that is, that you have a Commanding General, Army Air Forces, China Theater, directing the employment of the Tenth and Fourteenth Air Forces, one of these forces in a predominantly tactical cooperation with ground forces role, and the other a strategic force.

Arnold's unmistakably phrased letter had been preceded by a message of 8 June from General Marshall expressing surprise that Wedemeyer's original plan had been dropped and that Stratemeyer had not yet assumed command. Marshall also pointed out that Stratemeyer's promotion had been put through for the purpose of using him in China and asked to be brought up to date on Wedemeyer's latest plans.[83] After receiving Arnold's letter, Wedemeyer on 20 June informed Marshall of his full concurrence with Arnold's recommendations on the organization of his air forces: Stratemeyer would command the "China Theater Air Forces," and under him Chennault would command the "Strategical Air Force" and Davidson the "Tactical Air Force."[84] The available record is not full enough to explain the decision to keep Chennault; perhaps Wedemeyer sought only to give Chennault time to offer his resignation. At any rate, six days later General Chennault entered a vigorous protest against the whole plan,[85] and not until 6 July 1945 did he hand in his request for retirement.[86] Stratemeyer promptly approved and designated Stone as Chennault's successor in command of the Fourteenth Air Force.[87]

During June a number of officers from India had flown to Chungking as a planning staff to arrange with Wedemeyer for the selection of suitable quarters and office space. The Tenth's own troop carrier

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squadrons undertook the necessary lift over the Hump, with some help from the newly arrived C-54's. On 4 July a group of officers from Hastings Mill flew to Chungking to organize a Headquarters, Army Air Forces, China Theater. General Stratemeyer left for China twelve days later,[88] and on 23 July the Tenth Air Force Headquarters opened at Kunming. When the war ended, the move to China was still in process. During these last days of combat, the Fourteenth Air Force carried on operations, but for the Tenth, its war ended, not inappropriately, with the problems of one more major reorganization engrossing the attention of most of its personnel.

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SECTION III

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RETURN TO THE PHILIPPINES

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CHAPTER 10

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PRELUDE TO INVASION

AT THE END of July 1944 MacArthur's Southwest Pacific Area forces had landed at Noemfoor and Sansapor to end their long campaign in New Guinea while Pacific Ocean Areas troops under Nimitz consolidated positions they had seized in the Marianas. The time had come for a final decision on the interim strategic objective for the Pacific war specified by the CCS in the preceding December at Cairo: seizure of an Allied base in the Formosa–Luzon–China coast area which would permit the establishment of a direct sea route to China and interdiction of Japanese communications with the Netherlands East Indies.

Neither MacArthur nor Nimitz had a definite commitment precisely placing this major strategic base. The JCS on 12 March 1944 had preferred to indicate that, according to the situation on 15 February 1945, either Nimitz would be expected to invade Formosa or MacArthur would be directed to occupy Luzon. Meanwhile, MacArthur would complete operations along the New Guinea coast designed to support a POA invasion of the Palaus on 15 September and a SWPA assault against Mindanao on 15 November.* Nimitz, having occupied the southern Marianas and the Palaus, might be expected to attack Formosa on 15 February 1945; or, if Luzon could not be effectively neutralized by SWPA's land-based aviation, MacArthur's forces might be required to move northward from Mindanao to Luzon on 15 February in preparation for a POA assault against Formosa at a delayed target date.[1] No other strategic decision of the Pacific war would be discussed at greater length or with more heat.

Invasion Plans

Once the JCS had issued the directive of 12 March 1944, clarification of its tentative strategy necessarily awaited theater action. Busy

* For full discussion, see Vol. IV, 549–55, 570–74.

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with the Hollandia operation, SWPA undertook no immediate revision of its strategic plans. In answer to a request for information, MacArthur told the JCS on 8 May that he intended to seize an airdrome site on the coast of the Vogelkop about 1 August and then, coordinating his target date with POA's invasion of the Palaus, to acquire an airdrome site on Halmahera for flank protection and air support of the invasion of southern Mindanao.[2] The Joint Planning Staff (JPS) in Washington, who regarded the Palaus as the supporting base for Mindanao, saw little need for another such base in the northern Moluccas, of which Halmahera and Morotai were the chief islands. Moreover, the Joint Strategic Survey Committee (JSSC) on 29 May initiated an investigation of possible short cuts to speed up the Pacific war. Noting that current intelligence indicated the Japanese were building up strength in the Philippines at the expense of Formosa, the JSSC questioned whether it might not be wise to bypass Mindanao and attack Formosa directly. Deterioration of the Allied situation in China seemed to argue that Formosa should be captured at the earliest possible date. Adding this suggestion to their own opinion that invasion of the northern Moluccas was of questionable value, the JPS persuaded the JCS to question MacArthur and Nimitz on 13 June 1944 about their ability to speed operations by omitting steps projected prior to Formosa, by accelerating target dates, or by selecting other objectives, including targets in Japan proper.[3]

These questions reached the Pacific theaters at an inopportune moment. Only ten days before, Nimitz had issued his GRANITE II plan, which set target dates for POA operations as follows: the southern Marianas (FORAGER), 15 June; the Palaus (STALEMATE), 8 September; Mindanao (INSURGENT), 15 November; southern Formosa and Amoy (CAUSEWAY), 15 February 1945, or, if Formosa proved impracticable, Luzon (INDUCTION), 15 February 1945. Until the results of FORAGER became clear, he could offer no information regarding acceleration of later operations.[4]

At Brisbane, SWPA planners were just completing the finished draft of RENO V, which would be formally issued on 15 June. This plan, last of the RENO series,* reflected SWPA successes at Wakde and Biak. Subsequent campaigns were phased as follows: 1) Establishment of an air base in the Vogelkop and another in the northern Moluccas, with a contingent operation planned for the Kai and Tan-

* For the origin and development of this series, see index to Vol. IV.

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imbar islands if a Japanese air concentration on the west of New Guinea demanded additional left-flank protection. This phase would

be accomplished between July and October 1944, with the target date for invasion of Morotai, north of Halmahera, timed to coincide with POA's entry into the Palaus. Simultaneous target dates would

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permit the Pacific Fleet to cover both operations at one time. 2) Establishment of bases in Mindanao to support air operations against Luzon and North Borneo, November–December 1944. SWPA forces would seize Sarangani Bay, on the coast of southern Mindanao, on 25 October and establish airfields to support the principal effort on 15 November against northern Mindanao and Leyte. Parts of Samar would be added to the holding, and a major air, naval, and logistic base built. 3) Invasion of Luzon, January–March 1945. During January, a major amphibious movement, supported by airborne troops from Leyte, would seize the Bicol area of southern Luzon, and concurrently another landing operation from POA bases would seize airdrome facilities in the Aparri area of northeastern Luzon. During February the island of Mindoro, lying immediately southwest of Luzon, would be occupied by an airborne invasion from Leyte. With assistance from Filipino troops, SWPA would clean out the Visayas between December 1944 and June 1945, thus ringing Japanese forces remaining on Luzon with Allied air bases. In addition to an intensive bombardment of Luzon, Allied air forces would begin interdiction strikes from Mindanao and Sulu bases over North Borneo and the South China Sea. 4) Reoccupation of Luzon, April–June 1945. A major landing force would seize beachheads in the Lingayen Gulf area of the west coast of Luzon on 1 April, and, with an armored division and strong airborne support, the main attack would penetrate southward to occupy Manila. A secondary shore-to-shore operation from the Bicol Peninsula would seize a beachhead on the eastern coast of Luzon at Baler and Atimonan bays and force its way through the mountains to join the main drive. Reserve forces would be employed in contingent operations to outflank the Japanese on Luzon, and, as rapidly as possible, air bases on the island would be rushed to completion to broaden the strategic air effort against Japan. SWPA presumed that Pacific Fleet support would be made available for each phase of RENO V; by the time of the last phase, it expected to be using an equivalent of twenty-seven divisions.[5]

This plan was subsequently to be much streamlined, both as to timing and the forces scheduled for employment, but on 18 June MacArthur answered the JCS query with a flat negative:[6] his forces would be strained to the utmost to meet target dates already specified. To drop operations intermediate to the landing on Formosa was a radical departure from any previous Pacific plan, and the suggestion that the

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attack might be launched from the central Pacific without appreciable land-based air support was most unsound. MacArthur believed it would be necessary at least for SWPA to occupy Luzon and establish air bases there. Similarly, the proposal to bypass all objectives and invade Japan proper was utterly unsound: successes won, MacArthur cautioned, however great, should not lead to suicidal ventures. In addition to purely military reasons for retaking the Philippines, he urged that the United States owed the Filipinos their freedom. If serious consideration were being given to a direct invasion of Japan, he asked permission to come to Washington to express his views in person.

Although Marshall replied that neither of the two propositions was unsound and cautioned MacArthur not to let personal feelings and Philippine political considerations vitiate any plan to shorten the war against Japan,[7] it was obvious in Washington that SWPA target dates could not be significantly advanced at the moment. The JPS concluded that deletion of an invasion of Mindanao would hasten the Formosa operation by no more than one month because of a lack of available attack transports and cargo vessels. In addition, weather conditions would prevent an attack on Japan proper prior to October or November 1945. The JPS, however, considered that deletion of a Mindanao operation would avoid the possibility of a long and costly Philippines campaign; the only question was whether Japanese air strength on Luzon could be neutralized prior to Formosa operations without bases in the southern Philippines.[8]

At this juncture Nimitz, whose forces were being delayed in the Marianas, also confessed an inability to accelerate his campaigns. He had planned to invade the Palaus a week before the JCS target date of 15 September, but recent estimates indicated that the Palaus garrisons were being increased from 9,000 to 40,000 troops, and he was doubtful that even the JCS timing could be met. In order to save time he proposed to limit the operation to seizure of only two islands in the Palaus—Angaur and Peleliu—and to secure a fleet staging point at Kossol Passage. He would take Yap and Ulithi either simultaneously or shortly afterward. Having obtained information about RENO V from a SWPA-POA staff conference at Pearl Harbor on 3 July, Nimitz notified Washington that he considered the plan of campaign to be sound, even if the timing appeared optimistic.[9] He stressed the need for SWPA air support from Mindanao and Leyte prior to the Formosa operation. Leyte was of special importance: if this island fell

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into SWPA hands, the neutralization of the whole Philippines would be assured and subsequent operations could be expedited.[10]

These statements ended proposals, at least for a time, to skip operations in the southern Philippines. "We certainly should not take any action now to prevent the Mindanao-Leyte operation," Maj. Gen. Thomas T. Handy, AC/S, OPD, advised Marshall. "MacArthur's stand that Luzon must be seized before we go to Formosa may be right. Nimitz is not sure. . . . I believe we should await future developments."[11] Nimitz was permitted to reduce the scale of the Palaus operation as he had proposed. Morotai, by implication, gained status as the main supporting base for the invasion of southern Mindanao.[12]

Later in July questions of strategy again were reviewed at a conference of President Roosevelt, MacArthur, and Nimitz at Pearl Harbor. Remembering MacArthur's proposal to visit Washington, Marshall had taken advantage of Roosevelt's inspection of Pacific defenses to direct MacArthur to come to Hawaii on 26 July. On the next evening Roosevelt invited MacArthur, Nimitz, and Halsey to dinner, and after the meal he drew out a map, pointed to Mindanao, and said, "Well, Douglas, where do we go from here?" MacArthur, who had not been told that he would meet Roosevelt in Hawaii or that strategy would be discussed after dinner, nevertheless launched into a discussion of his ideas which lasted all evening. He urged that Luzon be seized (target date 15–25 February 1945) and bases established there from which Japanese shipping in the South China Sea could be interdicted and Formosa neutralized. The Pacific Fleet and POA would then be free to operate against the Japanese fleet and to seize air base areas in the Ryukyus and Bonins. Seizure of Formosa would be a massive operation, extremely costly in men and shipping, logistically precarious, and time-consuming. It would offer to the enemy air and naval opportunities against an overextended Allied supply line which would never otherwise be afforded. He was willing to give a personal guarantee that the Luzon campaign could be completed in six weeks, or thirty days after a landing at Lingayen.* He doubted that Luzon could be adequately neutralized from Leyte-Mindanao bases prior to CAUSEWAY, and he reiterated his conviction that the United States was morally obligated to liberate Luzon. The President agreed about the moral responsibility. Nimitz, presenting his views next morning,

* MacArthur told General Kenney that he would have Manila six weeks after the landing at Lingayen and all of the Philippines within eight months.

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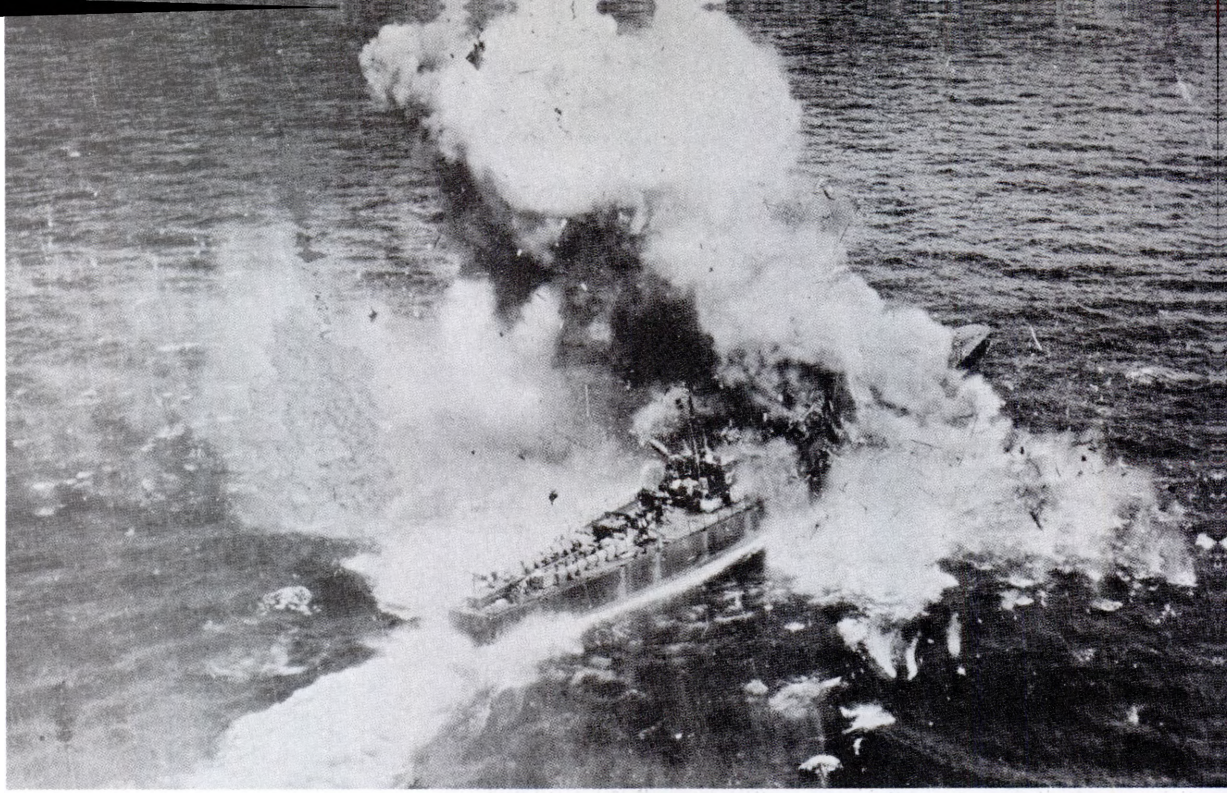
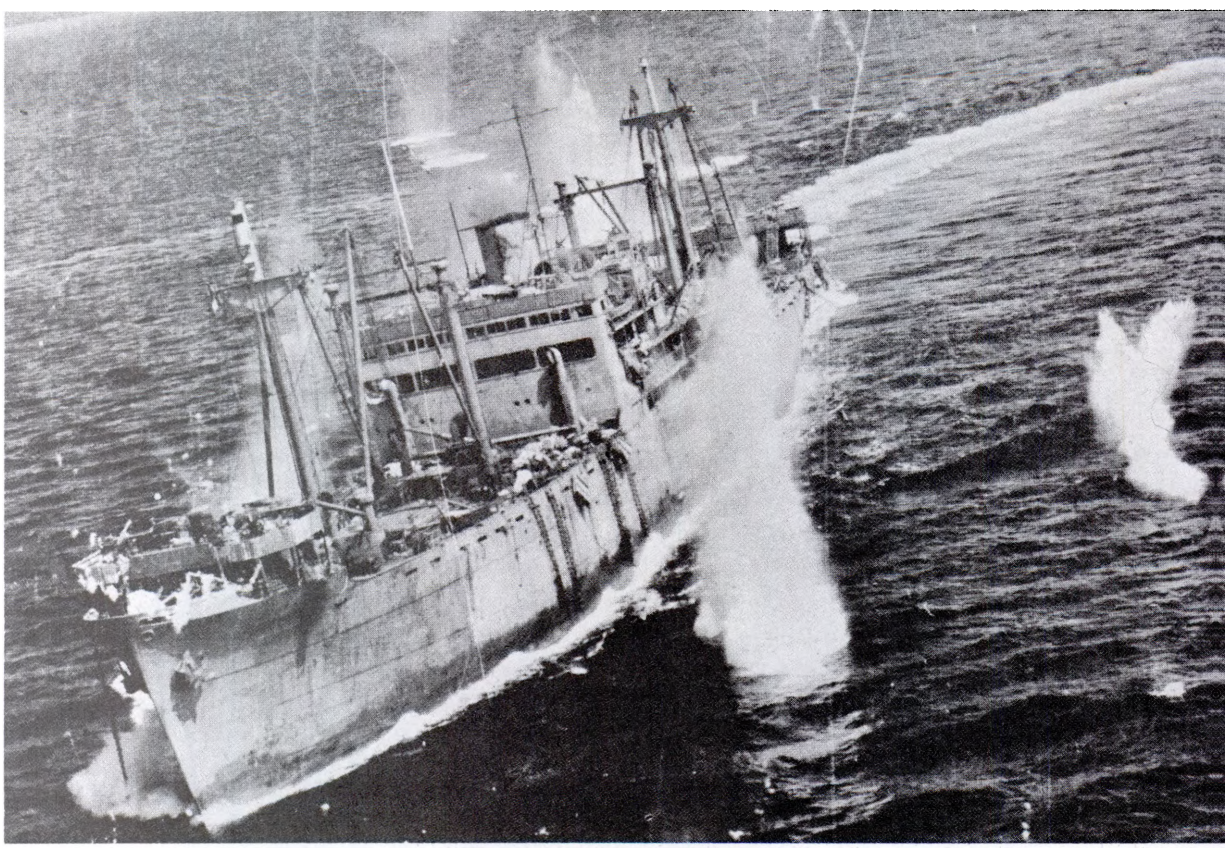
BATTLE FOR LEYTE GULF

Left: FEAF Planes Sink *Abukuma*

Right: But Miss *Yamato*





ORMOC BAY

Above: FEAF Planes Sink Destroyer

Below: Attack on a Transport

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was "clear that the time has not yet arrived for firm decision on moves subsequent to Leyte."[13] Since the conference was only for discussion, no decisions were reached.

Meanwhile, preparation of detailed campaign plans had begun at SWPA headquarters in Brisbane. To move landing forces across the 650 miles of sea between New Guinea and southernmost Mindanao would not be simple, and the augmentation of Japanese air forces under way in the Philippines would further complicate the problem. Even from Morotai it was some 350 miles to Mindanao. After discussing RENO V with Fifth Air Force's Maj. Gen. Ennis C. Whitehead and Thirteenth Air Force's Maj. Gen. St. Clair Streett, Lt. Gen. George C. Kenney, commanding the U.S. Far East Air Forces (FEAF)* and the Allied Air Forces, SWPA, informed MacArthur on 11 July that the first two phases of the plan were not in harmony with air capabilities.[14] Both the projected seizure of Morotai and the subsequent invasion of Mindanao-Leyte were, in his opinion, based on an overoptimistic expectation of support from Pacific Fleet carriers and contemplated establishment of air bases which would not be mutually supporting. "Carrier units," he wrote, "are so restricted in their time over targets and radius of action that they cannot be expected to neutralize and maintain neutralization of enemy strong points and air installations which would be within range of our objective." Direct support by carriers at a beachhead would be unsatisfactory because their planes lacked sufficient strafing and bombardment power. They could furnish fighter cover over a beachhead, but enemy air, surface, and subsurface action, together with the physical limitations of carriers, created constant uncertainty as to its maintenance. Kenney granted that the proposed invasion of the northern Moluccas could be covered by FEAF heavy bombers from Biak, but Japanese air installations threatening Sarangani and Leyte would be outside the range of fighter-escorted heavy bombers from either Morotai or Biak. Distances between Sansapor, Morotai, Sarangani, and Leyte were all too great for mutual air support; the Japanese could select one of the bases and knock it out before SWPA air units could protect it. It seemed to Kenney that these problems could best be met by properly spacing land bases, and he favored scaling down the individual invasions so as to move and build an air base every twenty to thirty days. Specifically, he recommended that if Sarangani were to be delayed until No-

* See Vol. IV, 646–51.

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vember, SWPA should install fighters and attack units at Talaud Islands (midway between Morotai and Sarangani) to support it; that SWPA should establish an intermediate fighter and attack aviation base in the Del Monte area of Mindanao prior to Leyte; and that heavy bombers should be operational at Sarangani in time to support the invasion at Leyte.[15]

This admonition, coupled with the fact that SWPA representatives had been informed in Hawaii that the amount of assault shipping obtainable would be less than expected, led to a recasting of the SWPA plans. It would be necessary to use the same amphibious equipment for both Sarangani and Leyte, making the latter follow Sarangani by thirty-five instead of twenty days as planned in RENO V. Since the troops put ashore at Sarangani would have to remain there for five weeks, they would require additional air support from a base in the Talaud Islands, which would also permit increased air coverage of Japanese targets in the central Philippines and southern Luzon. MacArthur advised the War Department on 23 July that his revised schedule would have to be: Morotai, 15 September; the Talauds, 15 October; Sarangani 15 November; and Leyte, 20 December.[16]

This schedule, however, was tentative, and it was kept under almost day-to-day study by a series of WIDEAWAKE planning conferences which met intermittently in Brisbane between early July and September 1944. There, representatives of SWPA G-3 and of the subordinate headquarters prepared a series of staff studies covering the planned invasions. Based on a new set of plans called MUSKETEER, the first of these was issued by SWPA on 10 July. MUSKETEER, unlike the more comprehensive RENO V, was concerned solely with operations in the Philippines, and at the initiation of the plan it was assumed that Allied forces would be established in the Marianas, Palaus, and northern Moluccas. The plan of campaign aimed at the establishment of air units in the central region of Luzon in four major phases of operations, KING, LOVE, MIKE, and VICTOR.[17]

The KING operations were to secure an initial lodgment in the southern and central Philippines and the establishment of bases to support subsequent operations. The preliminary blow, KING I, was to be directed at Sarangani Bay in Mindanao on 15 November 1944; the main effort, or KING II, would come on 20 December 1944 at Leyte Gulf, where major air, naval, and logistic bases would be established.

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The penetration was to continue northward with Operation LOVE, a series of campaigns designed to seize a favorable line of departure and to provide air and naval bases for operations against central Luzon. The main effort of this series, LOVE I (January 1945), was to come in the Bicol provinces of southeastern Luzon. Concurrently, LOVE II would establish air bases at Aparri on the northern coast of Luzon in order to cover convoy movements through the Luzon Strait. LOVE III (February 1945), the occupation and development of airfields in southwestern Mindoro, was designed as a subsidiary airborne operation aimed at securing bases for supplying convoy cover in the San Bernardino Strait–Sibuyan Sea routes, and for mounting airborne and air support operations against central Luzon. MIKE I would take place at Lingayen Gulf in an all-out invasion tentatively scheduled for 1 April 1945; MIKE II was set for the same month in the Baler-Atimonan area on the eastern coast of Luzon; a concurrent diversion, MIKE III, was projected for the Batangas area of southwestern Luzon; and a supporting operation, MIKE IV, was scheduled for May to strike the west coast of Luzon in Zambales Province in order to forestall a Japanese retreat into Bataan. Consolidation of Luzon, MIKE V, was expected to follow these initial invasions. The final reduction of Japanese garrisons in bypassed portions of Mindanao and the Visayas would comprise the VICTOR series of operations.*

In Washington the JPS who had not been advised of MUSKETEER, believed that early March 1945 was the latest date at which POA could invade Formosa. To allow three months for the preparation of an air base at Leyte and the neutralization of Luzon, it would be imperative that SWPA gain control of Leyte by 1 December. Accordingly, they questioned both MacArthur and Nimitz on 27 July as to 1) the practicability of eliminating the attack on the Palaus and substituting smaller attacks on Woleai, Ulithi, and Yap; 2) whether the Talauds and/or Sarangani Bay could be abandoned in favor of direct movement into northern Mindanao and Leyte; and 3) what specific operations MacArthur contemplated in northern Mindanao.[18] MacArthur answered the inquiry with a blistering message, expressing his strongest disagreement with the assumption that the primary purpose of his entry into the Philippines was to establish air bases for support of POA operations against Formosa. With the capture of Lu-

* See below, pp. 450–63.

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zon, the hazardous operation against Formosa would be unnecessary. In answer to the JPS's specific questions, he stated that the Palaus were essential, that Sarangani Bay and the Talauds could not be eliminated, and that operations in northern Mindanao would follow Leyte as soon as possible so as to relieve the civilian population there.[19]

To attempt a reconciliation of opinion between MacArthur and the War Department, Maj. Gen. John E. Hull, Chief of the Theater Group, OPD and Col. W. L. Ritchie, head of that office's Southwest Pacific Theater Section, joined Lt. Gen. Barney M. Giles, Chief of Air Staff, in Brisbane early in August for conferences with MacArthur. The SWPA head insisted that the Palaus would be needed as vital flank protection for the entrance of the southern Philippines. The use of shipping released by canceling the Palaus operation would make it possible to move up the Sarangani landing by about five days, but there would still be an interval of seven weeks between Sarangani and Leyte. Both MacArthur and Kenney were dubious that Luzon bases could be neutralized from Leyte, and MacArthur repeated with customary eloquence his conviction of the necessity for seizing Luzon and the impracticability of the Formosa operation. Both Hull and Giles were tentatively convinced of the correctness of MacArthur's position, although they reserved final judgment until they had talked to Nimitz and Richardson in Hawaii.[20] Giles, reporting his near-conviction to Arnold, observed: "I realize it is very hard to keep from getting 'localitis' after having talked to MacArthur for five hours (I mean listen)."[21]

The visit was not without some effect, however, on SWPA plans. Both Giles and Hull were convinced that SWPA should have two new air commando groups (completely airborne P-51 groups with their own transport aircraft) which were being trained in the United States.* With the expectation of getting these groups, the FEAF staff projected a new airborne invasion (styled KING III) into the Misamis Occidental Province of western Mindanao. Here, in an area controlled by guerrillas, fighter fields would be prepared for cover of air operations into the Visayas and southern Luzon. Given this operation, Kenney was willing to bypass either the Talaud Islands or Sarangani, preferably the latter. Ritchie seems to have instigated further SWPA study looking toward acceleration of operations after Leyte, predi-

* See above, p. 208 *n.*

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cated on MacArthur's conviction that Luzon would be invaded instead of Formosa.[22] A revision of the MUSKETEER plan, drawn up during the last ten days of August, was issued formally on 29 August.[23]

Primary objectives in MUSKETEER II remained much the same as in the earlier plan, with the significant exception that Formosa and the China coast were no longer mentioned. The initial KING operations still included a landing at Sarangani Bay on 15 November, with the main effort at Leyte Gulf scheduled for 20 December, but KING III, the new airborne operation, was included for 8 December. The LOVE series was reduced to two phases, the seizure of Aparri on 31 January 1945 and an airborne invasion of Mindoro on 15 February. The MIKE operations would begin with the main assault at Lingayen Gulf on 20 February instead of April, and MIKE II, the supporting operation planned for Dingalan Bay on 5–15 March, would be employed if needed.

Meanwhile, the Navy had begun to press for a definite directive about Formosa. On 18 August Nimitz, agreeing to all SWPA operations projected through Leyte and noting that he was prepared to cover them with the Pacific Fleet, asked Admiral King to secure a JCS directive for this SWPA effort and his own attack on Formosa and Amoy. He believed carrier attacks and land-based bombardment from Leyte could neutralize Luzon; if not, SWPA could move on Luzon during the CAUSEWAY operation. Nimitz admitted that he was having trouble reconciling variations in estimates of the required forces submitted by Richardson and Lt. Gen. S. B. Buckner, who would command the military expedition, but he recommended a directive for CAUSEWAY with a target date of 15 February 1945.[24] King forwarded the message to Marshall with a request for JCS action.[25] Naval planners seemed to have some hope that part of the required forces might be pried loose from MacArthur, and they feared that unless both Leyte and Formosa were coupled in one directive, MacArthur would so plan the Leyte venture as to make Formosa impossible.[26] On 23 August, Nimitz reiterated his request for a firm directive on Formosa.[27]

Opinion in the War Department, meanwhile, had moved toward the SWPA point of view. On his way back to Washington, Hull had stopped in Hawaii long enough to discuss strategy with Richardson

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and Lt. Gen. Millard F. Harmon of the Army Air Forces, Pacific Ocean Areas (AAFPOA).* Both had been in agreement on the RENO strategy, and Richardson had already written Marshall on 1 August that he and his staff did not see how Formosa could be supported logistically without Luzon. From observations on Saipan, Richardson did not believe that the Marianas could possibly support an invasion of the magnitude of CAUSEWAY.[28] Ritchie had taken back to Washington a copy of the proposed revisions of MUSKETEER, which, with its earlier target date for Luzon, had pleased Marshall. In a teletype conference with Brisbane on 25 August, Ritchie urged Sutherland to send in an official message confirming the new target dates and to hurry some high-level SWPA staff officer to Washington for presentation of MUSKETEER II.[29] Two days later, MacArthur confirmed the new target dates.[30]

On 28 August, Rear Adm. Forrest P. Sherman, Nimitz' chief planner, explained the CAUSEWAY plan to the JPS. The scheme of operations now contemplated use of three Marine divisions against Amoy, on the south China coast, while two Marine and four Army divisions seized the southwestern part of Formosa instead of the whole island as originally had been intended. This change had been made in order to employ a minimum force, but estimated requirements were still large. Nimitz estimated that 424,000 men would be needed, Richardson 468,000, and Buckner 566,094. Sherman believed that carrier strikes, coupled with Kenney's air efforts from Leyte and Seventh Air Force attacks from the Palaus, could keep Japanese air units in the Philippines "pounded down." He considered SWPA operational plans up through Leyte to be "necessary and well coordinated," but when asked his opinion of the feasibility of a direct attack on Kyushu instead of Formosa following Leyte, he doubted its practicability since it could be supported only by carrier and VHB aircraft. Even supposing the destruction of the Japanese fleet, Sherman did not believe a Kyushu operation would be sound "without shore-based aircraft which must be counted on to support the troops continuously over a sustained period."[31]

At a JCS meeting on 1 September, Sherman urged the immediacy of Nimitz' need for a firm directive, if the Formosa operation were to be undertaken on 1 March, when the weather would be most favorable. Marshall observed that an immediate decision would have to

* See below, pp. 507–12.

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favor Luzon in view of available resources, and he proposed that it would be better to await future developments. King, on the other hand, urged at length that a Luzon operation would delay the war against Japan. Leahy suggested as a compromise that it might be possible to assemble supplies for either Luzon or Formosa and that immediate attention should be given to the directive for Leyte. The JCS directed the JPS immediately to prepare a directive on that basis.[32] A draft directive submitted the next day proposed to inform MacArthur and Nimitz that a firm decision regarding Luzon or Formosa would be postponed. Meanwhile, SWPA, after conducting necessary preliminaries, was to occupy the Leyte-Surigao area on 20 December and establish air bases to support either a POA attack on Formosa on 1 March 1945 or its own invasion of Luzon on 20 February 1945. POA was to support the Leyte operation, submit plans for the invasion of Formosa and Amoy, and be prepared for assistance to a Luzon operation.[33]

King, not satisfied with this solution, presented his own draft directive to the JCS.[34] He argued that seizure of Formosa promised psychological and material assistance to China, interdiction of Japanese sea traffic to the Indies, and the establishment of air, naval, and logistic bases for an attack on Japan proper. If the JCS were unable to issue a firm directive for Formosa, he recommended that they direct MacArthur to proceed with his operations through the invasion of Leyte and Samar and to develop bases on the former for containment of Japanese forces in the northern Philippines and for support of further SWPA and POA advances. Nimitz would be directed to provide fleet cover and support for MacArthur's advances through Leyte and to prepare for a move into Formosa-Amoy on 1 March 1945 if the JCS directed it.

At a meeting of the JCS on 5 September, Marshall noted the considerable change between the original plan to take all of Formosa and the new plan to take only part of that island together with Amoy. Until a clearer picture was available, he could only agree to postpone the decision. Leahy, taking a broad view of the Pacific war, saw three possible courses of action: occupation of the Philippines to include Luzon, occupation of southwestern Formosa and Amoy, or occupation of southern Kyushu. Necessary forces were available only for the first, which also promised the smallest number of casualties; he therefore favored a strategy based on reoccupation of the Philippines,

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together with an intensive bombardment of Japan by VHB's and a rigorous air and naval blockade of the enemy homeland.[35] Meeting again on 8 September, the JCS approved the directive which the JPS had furnished on 2 September, substantially as it had been drafted.[36] MacArthur and Nimitz had won approval of their objectives in the northern Moluccas and the Palaus, and Leyte was scheduled for December. With this action, the JCS had finally evolved a directive for the initial invasion of the Philippines, but once more they had cautiously postponed a decision as to the main strategic objective.

Netherlands New Guinea Bases

Concurrently with the debate on strategy, SWPA's Allied Air Forces had been engaged in moving its units into Netherlands New Guinea, where they would be in position to support the invasions of the northern Moluccas, the Palaus, and then the southern Philippines. Anticipated missions would not be simple: great distances—all over water—separated hostile concentrations which would have to be neutralized, and the Japanese air forces were showing signs of recovery from defeats at Wewak, Hollandia, and in the Marianas. Estimates on 31 July placed 860 operational aircraft (over half of them in the Philippines) within striking distance of the Allied invasion areas. It also seemed probable that the Japanese might bring naval aircraft equivalent to a carrier division to the Philippines by 15 September, making a grand total of 1,220 planes available for the defense of Morotai or the Palaus. If the enemy followed his usual procedure, he would divide his force and try to defend each area, but he could be expected to concentrate his main striking force in the southern Philippines, especially on bases around Davao.[37]

The Allied Air Forces, even without the expected help from Pacific Fleet carriers, could muster a twofold numerical superiority: on 4 August, FEAF had 2,306 serviceable aircraft, and RAAF Command, the other large component of the Allied Air Forces, had 413 serviceable aircraft—making a total of 2,719 planes (including 460 transports) available for operations. But this superiority was theoretical at best, because Allied air units were strung out all the way from Biak and Noemfoor islands to Guadalcanal and Australia, with the real center of gravity in the Nadzab–Manus Island areas, over a thousand miles from Morotai and even farther from the Palaus. Before the air support for Morotai and the Palaus could approach effective strength, the

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combined striking power of the Fifth and Thirteenth Air Forces and of RAAF Command would have to be moved to Netherlands New Guinea.[38]

The general plan for this forward deployment assumed that the Fifth Air Force would serve as the assault force in initial Philippine operations, while the Thirteenth would concentrate at Sansapor, Morotai, and the Talauds. On leaving the Solomons and Admiralties, the Thirteenth would turn over its part of the commitment against bypassed areas to Aircraft Northern Solomons (AIRNORSOLS), a composite organization of U.S. Marine, New Zealand, and Australian air units commanded by a Marine airman.* Initially, RAAF Command would furnish an air garrison at Noemfoor and eventually displace Thirteenth Air Force units at Morotai as the latter moved into the Philippines. Forward progress of the Far East Air Service Command (FEASC) would closely follow the tactical situation. Utilizing its IV and V Air Service Area Commands independently, FEASC was to plan for complete evacuation of its service organizations from Australia by the second quarter of 1945. The IV ASAC, through December 1944, would be expanded to include all FEASC activity in New Guinea; the V ASAC would implant its units in the southern Philippines, moving its depots from Darwin to Sarangani Bay beginning in December 1944 and from Townsville to Leyte beginning in January 1945. Starting in June 1945, the IV ASAC would move its depots from Finschhafen and Biak to Manila, thus liquidating FEASC activity in New Guinea.[39]

Although SWPA forces had landed at Cape Sansapor on 30 July and would have Middelburg and Mar airdromes ready for tactical air garrisons within a few weeks, the most advanced Allied airfields on 1 August were on Noemfoor Island. There the engineers were rehabilitating, virtually rebuilding two airdromes captured from the Japanese. The RAAF 10 Operational Group, controlling the 78 Wing, was occupying the Kamiri airstrip. Kornasoren, scheduled for use as a heavy bomber airdrome, would be used by a U.S. air garrison under control of the 309th Bombardment Wing (H), but as yet only an advanced detachment of the wing and a detachment of the 419th Night Fighter Squadron had arrived. The site of a third Japanese strip —Namber—was to be used for unloading surface vessels during the winter season.[40]

* See Vol. IV, p. 647.

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More extensive airfield development was under way in the Schouten and Padaido islands, approximately 100 miles east of Noemfoor. Facilities available on Biak early in August were Mokmer airstrip, being extended into a modified heavy bomber base; Borokoe strip, under development as a fighter–medium bomber field; and Sorido, to be built to serve transports and as an air depot. Because of prolonged ground fighting on Biak, engineer units had begun construction of a heavy bomber base on nearby Owi Island. Operational air units at Mokmer on 1 August were the 49th Fighter Group, the 475th Fighter Group, the 345th Bombardment Group (M), the 17th and 82d Reconnaissance Squadrons, the 25th Photo Reconnaissance Squadron, and a part of the 2d Emergency Rescue Squadron. On Owi were the 8th Fighter Group, the 43d Bombardment Group (H), and the 421st Night Fighter Squadron. Patrols were being flown by PBY's and PB4Y's of Navy squadrons VB-115, VP-34, and VP-52. All units on Owi and Biak were under operational control of the 308th Bombardment Wing (H).[41]

Farther down the coast of New Guinea—180 miles east of Biak—the 348th Fighter Group, a part of the 90th Bombardment Group (H),* and the 418th Night Fighter Squadron (B-25H) were based on the heavy bomber strip and dispersals which completely covered the small island of Wakde. These units were under the local operational control of the 85th Fighter Wing, which was itself directly subordinate to the 310th Bombardment Wing (M) at Hollandia. Only 275 miles east of Biak, but rapidly becoming a rear area, were the Hollandia, Sentani, and Cyclops strips at Hollandia. Here on 1 August were located a small headquarters detachment of FEAF and the headquarters of the 310th Bombardment Wing (M), which controlled the 3d and 312th Bombardment Groups (L), a detachment of VP-33, and the 317th Troop Carrier Group reinforced by the 67th and 70th Squadrons of the 433d Troop Carrier Group.[42]

Movement to the forward bases of these tactical units with their supporting services had been fraught with extreme difficulties. SWPA had been forced to depend upon its own insufficient shipping, delays in the ground campaign on Biak had complicated projected shipping schedules, and a combination of both of these had delayed airfield

* The 90th Bombardment Group, although based at Nadzab, was flying missions through Wakde.

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construction. Noemfoor was a reef-surrounded island, which made the unloading of cargo vessels there a tortuous task. By extreme effort, including maximum use of troop carrier C-47's and bombers withdrawn from tactical operations, air echelons of units needed to support the Netherlands New Guinea campaign had been ferried forward; despite a loss of almost half of their combat efficiency because of poor maintenance and supply, they completed their assigned combat missions. Living conditions at advanced bases during the deployment were, without exception, bad. On Owi scrub typhus threatened to reach epidemic proportions until checked by impregnation of all clothing and blankets in a dimethyl phthalate soap solution. Quartermaster rations received were poor in quality and variety: C-rations, corned beef, canned salmon, dehydrated potatoes, canned carrots, canned chili, and canned sauerkraut was the diet of the 8th Fighter Group during July. In one shipment of 600,000 rations to Biak, two-thirds of the meat component was corned-beef hash. The water supply at Owi, a small coral island, depended on shallow wells and such supply of rain water as could be trapped from deluges so great that it seemed "to rain horizontally." The brackish water, heavily chlorinated, was distasteful to drink and unavailable for bathing.[43] Japanese night air raids plagued Biak and Owi, the latter island being so small that it created "the impression that a bomb hit anywhere was a near miss for everyone." But, as reported by a fighter group on Biak, "Nomadic life had achieved the status of normalcy," and cynics often asked, even as they cleared a new camp site in virgin jungle, "When do we move?"[44]

Difficulties with water transportation improved with time, and hard and ingenious labor bettered living conditions. During August and early September the Allied Air Forces built up to their planned strength in Netherlands New Guinea as quickly as shipping and facilities permitted. The fighter strip on Middelburg Island and the Cape Sansapor bomber strip at Mar were completed with nominal delays, and between 18 and 26 August, a detachment of the 419th Night Fighter Squadron and the 347th Fighter Group began operations on Middelburg. Ground echelons of the 18th Fighter Group arrived on 23 August, but Mar airdrome was not ready for its aircrews until 6–7 September. Ground personnel of the 42d Bombardment Group (M) arrived on 24 August, but the aircrews of the group, held at Hollandia

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to fly missions coordinated with the invasion of Morotai, did not arrive until 14–18 September. Arrival of the Catalina patrol squadron VP-33 completed the 13th Air Task Force garrison at Sansapor.[45]

On Noemfoor, both the Kamiri and Kornasoren air garrisons were augmented. Aircrews of the 35th Fighter Group landed at Kornasoren on 7 August to operate without a ground echelon pending movement to Morotai. The 348th Fighter Group (less its 342d Squadron, left behind to fly cover for Wakde and Hollandia) with its new P-47D-23 type aircraft arrived on 26 August; on 3 September the group was joined by the newly activated 460th Squadron, making it the only four-squadron fighter group in SWPA. On 29 August the 868th Bombardment Squadron, XIII Bomber Command's radar-equipped night-bombing B-24 unit, moved to Noemfoor to continue night attacks against the Palaus already inaugurated from Manus. The 58th Fighter Group unloaded on 30 August and received its flight crews on 6 September, and two days later the A-20's of the 417th Bombardment Group began to move in from Saidor. By 15 September, 10 Operational Group at Kamiri airdrome had in place its 77 and 81 Wings.[46]

Biak and Owi were built up as befitted their role as the major Allied air base in Netherlands New Guinea. During August and early September, Fifth Air Force Headquarters moved into Owi, allowing the 308th Bombardment Wing (H) a period of badly needed rest at Hollandia. Whitehead also pressed forward the two heavy bombardment groups remaining at Nadzab (the 90th and 22d), moving them squadron by squadron as hardstands were completed, the official change of station being on 10–11 August. The 38th Bombardment Group (M) was operating from Borokoe strip on 31 August, and by 15 September all of the squadrons of the 6th Photo Reconnaissance and the 71st Reconnaissance Groups were in place on Biak. Upon completion of Sorido strip, the 3d Emergency Rescue Squadron, just arriving from the United States for assignment to the Thirteenth Air Force, joined the 2d Emergency Rescue Squadron there, and on 27 September the 375th Troop Carrier Group also took station at Sorido.[47] Until he had located this tactical air garrison, Whitehead staunchly opposed any diversion of construction and shipping effort to air depot installations, despite FEASC's objections that this was vitiating nearly one-half of its depot repair capacity. Beginnings were made on Depot No. 3 at Sorido during August. The 60th Air Depot Group arrived on 1 September and the 13th Air Depot Group on 20 October, and by No-

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vember the depot was nearly complete. By mid-September it had begun to operate, substantially improving the logistic situation forward.[48]

As quickly as Fifth Air Force units cleared Wakde, the Allied Air Forces secured permission, effective 15 August, to cease Thirteenth Air Force raids on Truk, Woleai, and other Carolines targets which had been supporting POA's Marianas operations,* and began movement of the XIII Bomber Command, together with its 5th and 307th Bombardment Groups (H) into the island. Using their B-24's and such C-47's as could be obtained, the groups moved most of their personnel into Wakde on 12–24 August. With the XIII Bomber Command officially established at Wakde on 22 August, the detachment of the 85th Fighter Wing returned to Hollandia; similarly, the 418th Night Fighter Squadron, relieved of B-25 night intruder missions on 18 August, moved back to Hollandia to train with P-61's. The air echelon of the 342d Fighter Squadron, however, continued to fly cover at Wakde until 21 September, when it was permitted to join its parent group at Noemfoor.[49]

During the first week of September GHQ, SWPA, and the Allied Air Forces moved from Brisbane to Hollandia, the Allied Air Forces, without many of its RAAF representatives, becoming now almost completely identified with its American component—FEAF. During the middle of September an advanced echelon of Thirteenth Air Force Headquarters moved from the Admiralties to Hollandia, effecting the closer coordination desired by FEAF. Control of the residual tactical air garrison at Hollandia passed from the 310th Bombardment Wing (M), which was preparing to move to Morotai, to the 308th Bombardment Wing (H) on 3 September.[50]

Morotai and the Palaus

On 15 June, Admiral Halsey had been relieved of his South Pacific command and transferred to Pearl Harbor to undertake detailed planning for the invasions of the Palaus. By 14 July Nimitz had agreed to a new plan (STALEMATE II), divided into two phases.[51] First, POA forces would take Peleliu, Angaur, and possibly Ngesebus islands, all at the south end of the Palau chain and believed to be defended by about 9,700 Japanese. Fields would be rehabilitated on Peleliu for Marine fighter units by D plus 10, and a heavy bomber base would be built on Angaur by D plus 35. Air units would then neutralize the ap-

* See Vol. IV, 676–90.

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proximately 27,000 Japanese troops remaining on Babelthuap and adjacent islands. Second, the POA forces would seize Ulithi Atoll (300 to 600 Japanese) and would take Yap Island (10,500 Japanese) for development into a fighter base to cover the fleet anchorage at Ulithi. This plan was incorporated into a formal CINCPAC operations order on 21 July, with 15 September as the tentative target date for the first phase.[52]

Fearing that Nimitz might postpone the Palaus invasions, Kenney and Whitehead had worked out plans to get SWPA to Mindanao without Pacific Fleet support,[53] but these plans were laid aside when Nimitz' order confirming fleet and carrier support for the northern Moluccas invasion was flashed to SWPA on 7 July.[54] Selection of a target area in the Moluccas had not been difficult. Since it was desirable to have the Allied air base as far north as possible and to avoid most of the 30,000 Japanese defense troops in the islands, Morotai, an island just north of Halmahera, lightly held and with a seemingly abandoned airstrip site on its southeastern end, was the logical objective. Actually, as was usual in SWPA, no adequate terrain intelligence was available; a scouting party put ashore during June had never reported. With the equivalent of six aviation engineer battalions the GHQ engineer believed that air facilities could be constructed in southeastern Morotai within twenty-five days. GHQ issued a warning order for Operation INTERLUDE on 21 July, assigning it the target date of 15 September.[55]

Matters requiring intertheater coordination were resolved when a POA delegation met with SWPA planners in Brisbane on 27 July. It was agreed that the Third Fleet, organized around Task Force 38 under Vice Adm. Marc A. Mitscher, would move upon the Palaus from the direction of Emirau, commence long-range fighter sweeps against Yap and the Palaus on the afternoon of D minus 9, and hit these targets with sustained attacks on D minus 8. Leaving one fast carrier group and three escort carrier divisions to continue neutralization of the Palaus, Task Force 38 with its other three fast carrier groups would attack Mindanao airfields from D minus 7 to D minus 5, concentrate against southern Mindanao airfields from D minus 3 to D minus 1, and detach one fast carrier group to give support at Morotai on D-day. SWPA agreed that the Allied Air Forces would 1) support POA operations by an intensive bombardment of the Palaus from D minus 40 to D minus 10 and with nightly attacks until D mi-

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nus 1; 2) cover the approach of Task Force 38 by attacks on southern Mindanao airfields between D minus 12 and D minus 7; and 3) intensify attacks on enemy airfields west of New Guinea subsequent to D minus 7 for protection of the fast carrier group in its approach to Morotai. Allied Air Forces long-range patrol planes would also fly search missions to cover all approaches by the Third Fleet.[56]

Halsey issued his operations plan on 1 August, incorporating the fleet maneuver agreed on at Brisbane and outlining the amphibious and ground campaigns.[57] Rear Adm. Theodore S. Wilkinson would command the Joint Expeditionary Force which would transport, land, and support the ground troops; Maj. Gen. J. C. Smith, USMC, would be in over-all command of the ground forces. Maj. Gen. R. S. Geiger, commander of the III Marine Amphibious Corps, would use the 1st Marine and 81st Infantry Divisions to seize Peleliu, Ngesebus, and Angaur, beginning on 15 September. Maj. Gen. J. R. Hodge, commander of the Army XXIV Corps, would use the 7th and 96th Infantry Divisions to seize Ulithi and Yap, beginning on 4 October. MacArthur's operations instructions, issued on 29 July,[58] directed Lt. Gen. Walter Krueger, commander of the Alamo Force (Sixth Army), to seize Morotai, beginning on 15 September. For this mission Krueger organized the TRADEWIND task force, consisting principally of Maj. Gen. C. P. Hall's XI Corps, the 31st Infantry Division, and the 126th Regiment of the 32d Division.[59] Acting under Vice Adm. T. C. Kinkaid, commander of the Seventh Fleet and Allied Naval Forces, Rear Adm. D. E. Barbey, commander of the Seventh Amphibious Force, would transport, land, and cover the TRADEWIND force. For naval support Barbey would have two escort carrier divisions (six CVE's) borrowed from CINCPAC and the Seventh Fleet's cruisers. The fast carrier group of Task Force 38 which would be at Morotai on D-day would cooperate with Barbey, but it would not be within SWPA command channels.[60]

To the Seventh Air Force, operating from central Pacific bases, fell the responsibility for the neutralization of Truk, Yap, Ulithi, other Carolines, Marshalls, Marianas, and Bonins. The burden of land-based preliminary bombardment fell to SWPA's Allied Air Forces, which delegated most of the air mission incident to STALEMATE and INTERLUDE to its Fifth Air Force. The XIII Bomber Command, flying from Wakde under operational control of the Fifth Air Force, would neutralize the Palaus with intensive strikes until D minus 10,

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and the 868th Bombardment Squadron, flying from Noemfoor, would continue to harass the Palaus nightly until D minus 1. More directly in support of INTERLUDE, XIII Bomber Command, taking over a task already under way, would seek to render Galela, Lolobata, and Miti airfields on Halmahera completely unoperational between D minus 8 and D minus 1. Aircraft Seventh Fleet searchplanes, under operational control of the Fifth Air Force, would extend 1,000-mile-long search sectors out of Owi to blanket the waters between the Philippines and the Palaus. The 13th Air Task Force at Sansapor and the RAAF 10 Operational Group at Noemfoor (both under Fifth Air Force operational control) would add weight to attacks on the northern Moluccas, neutralize each Japanese airfield remaining on the Vogelkop, and provide cover for the convoys and direct support to the ground operations on Morotai. The RAAF Command, using the 380th Bombardment Group (H) and other shorter-range units based in northwestern Australia, would continue neutralization of Japanese airfields on the Ambon-Boeroe-Ceram islands and on other islands in the Timor and Arafura seas; from D minus 2 through D plus 2 it would hold its forces in readiness to support the Fifth Air Force as ordered.[61]

In the Palaus, POA planned to develop airfields on Peleliu and Ngesebus suitable for short-range Marine units which would neutralize Japanese strength remaining in the islands, and on Angaur a 6,000-foot heavy bomber strip for use by the Seventh Air Force's 494th Bombardment Group (H). Initial construction would be supervised by the ground task force commanders, but at the conclusion of the combat phase, island commanders—an Air Corps officer, Col. Ray A. Dunn, had been named Island Commander, Angaur—would assume responsibility for the completion of outlined heavy bomber base facilities.[62] SWPA specified that air facilities for Morotai would include a rehabilitated 5,000-foot fighter strip by D plus 2, construction of a 7,000-foot bomber strip by D plus 25, and completion of a third 6,000-foot strip (oriented for extension to 7,000 feet) by D plus 45. As usual in SWPA, the ground task force received control of all engineering effort during the combat phase, but Brig. Gen. Donald R. Hutchinson, commander of the 310th Bombardment Wing (M) and thus senior air commander, would be permitted to designate the airstrip sites, a procedure which had been permitted at Gusap and Nadzab in the fall of 1943 and much later at Sansapor.[63]

As soon as heavy and medium bombers could operate from Biak and

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Owi bases and returning P-38's could be sure of minimum facilities on Noemfoor, the Fifth Air Force began attacks on the northern Moluccas to cover the Allied landings at Cape Sansapor on 31 July.* Aerial photographs of the northern Moluccas, taken by high-flying F-5's on 21–23 July, had revealed a substantial enemy air garrison and diligent enemy efforts to build new air bases.[64] Although Whitehead suspected that the air garrison was defensive, he sent a combined heavy-medium bomber raid, covered by P-38's, against Lolobata, Miti, and Galela airdromes on 27 July; the prize was some sixty Japanese planes. One P-38, with a mechanical failure, made a water landing en route home and its pilot was saved by a Catalina; otherwise, there were no Allied losses to a lethargic Japanese defense. Four P-38's of the 433d Fighter Squadron, making a long-range sweep of the waters northwest of Halmahera on 1 August, destroyed two Rufes and a Val, but after this date the Japanese evidently preferred to hoard their remaining aircraft. Against almost daily air attacks the aim of the Japanese gunners improved slightly, but as August wore on even the AA crews slacked up, firing usually at the first planes of a formation and then, evidently having saved face, taking to cover. Only three aircraft were lost to hostile action during August, all B-25's, one of which was shot down by AA on 13 August and the other two planes collided during evasive action over Dodinga Bay on 15 August. Only weather gave the Japanese surcease from Fifth Air Force attacks. The weight of attack amounted to only about one-fourth of the total of 3,631 tons of bombs expended by the Fifth Air Force during August, but by 2 September there were no enemy aircraft operational on the Molucca airfields.[65]

Late in July, his supposition about the northern Moluccas confirmed by the lack of air opposition to the first Allied raid, Whitehead began to send missions against the airfields on the Ambon-Boeroe-Ceram islands. Although the area was assigned to the RAAF Command, Whitehead considered it a dangerous flanking threat to the line of the SWPA advance. On days when weather prevented missions to the Halmahera area, Fifth Air Force planes were turned into the Ambon-Boeroe-Ceram triangle, often after the missions were airborne. One harassed intelligence officer, after briefing a mission on six different objectives, complained that the requisite maps and target photos "looked like the first half of Cook's travel pamphlet of the Dutch East Indies."[66] The Boela oil fields and oil storage tanks on Ceram, first at-

* See Vol. IV, 661–70.

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tacked during July, continued to serve as secondary targets, and during August the Ambon-Boeroe-Ceram islands absorbed some 789 tons of Fifth Air Force bombs—an effort which was augmented by the 380th Bombardment Group from northwestern Australia. These missions were contested by enemy AA, and hostile fighters presented at least an incipient hazard, although the Japanese seemed to wish to save their planes, probably for night raids through Vogelkop fields against Allied bases. On 17 August fifteen to twenty Japanese fighters were flushed off Haroekoe airdrome on Ceram by a Liberator mission, and twelve P-38's of the 80th Fighter Squadron shot down three of them with the loss of one P-38 which crashed while pursuing an enemy plane. At almost the same hour, eleven P-38's of the 35th Fighter Squadron, escorting B-24's to Liang airdrome on Ambon, contacted about eleven enemy planes and, despite the efforts of the enemy to avoid combat, shot down four Oscars and a Sally bomber. One of these P-38's, having prolonged its flying time in combat, ran out of fuel on the return trip and ditched near Japen Island, but its pilot was saved by a PBY. Despite the success of this bombing effort in clearing enemy airplanes from the fields on Ceram, the Japanese were thought on 2 September to have forty-eight operational aircraft on Ambon and Boeroe.[67]

Fifth Air Force heavies and mediums, weathered out of both the Moluccas and Ambon-Boeroe-Ceram targets, commonly dumped their bombs on the Japanese airfields in the Vogelkop, which were the primary targets for shorter-range Fifth Air Force and RAAF planes flying from Noemfoor, Biak, and Hollandia. This largely unspectacular effort, which carried the heaviest tonnage dropped by the Fifth during August, was designed to prevent Japanese night raiders from staging through the Vogelkop fields, but a few picayune night raids during the month showed that it was nearly impossible to interdict all night attacks by such tactics as long as the Japanese had any airplanes within striking distance. Fifth Air Force B-25's by day and B-24's by night enforced a rigid antishipping blockade in the waters of the Vogelkop-Ceram-Halmahera triangle, but the fact that the Japanese were keeping their larger vessels out of the area denied the bombers notable success.[68]

During August planes of XIII Bomber Command undertook the strikes designed to soften the Palaus for invasion. Targets in those is-

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lands had been previously attacked by Pacific Fleet carriers and Fifth Air Force B-24's, but photos taken by F-5's on 4–5 August showed that the Japanese were still maintaining thirty-six planes at the rough strip on Peleliu. The strips on Ngesebus and Babelthuap appeared serviceable but untenanted; nine Jake floatplanes were parked on a ramp at Arakabesan Island. Headquarters and supply buildings on Malakal and Koror islands (the latter the site of both the local military headquarters and that of the South Seas Bureau, the Japanese civil administration for the mandated islands) appeared battered but impressive, and each of the main islands was heavily defended by AA. Beginning on the night of 8 August, the 868th Bombardment Squadron began a series of nightly attacks from Los Negros against either Malakal or Koror targets and, prevented only by weather on 16 August, continued through 28 August. Moving to Noemfoor, the squadron flew nightly strikes against the Palaus during 7–14 September. With the loss of only 1 plane and 5 crewmen in an operational accident, the squadron sent 57 B-24's and 91.2 tons of frags, demos, and incendiary bombs against the Palaus during these raids. Results were unobserved.[69]

By 23 August the 5th and 307th Bombardment Groups were getting into place at Wakde. That day the crew of a single B-24 photographing targets in the Palaus reported few enemy airplanes visible but observed so much small shipping in Malakal Harbor that XIII Bomber Command, scheduling its first raid for 25 August, devoted the 307th Group to shipping and ordered the 5th Group to bomb nearby Koror town. Two squadrons of the 307th placed a good pattern of 250-pound bombs across the harbor, but with few vessels there, only a barge and a small cargo ship were hit. The 372d Squadron, seeing no targets, bombed the piers at Koror town, drawing seven Japanese fighters which badly damaged one of the B-24's. The plane successfully limped back to Wakde, but two other B-24's in the squadron collided and crashed while penetrating a weather front en route home. Planes of the 5th Group weathered heavy, moderate, and generally inaccurate flak to drop their 100-pound bombs in an excellent pattern over Koror town. Withdrawing from the target, the B-24's were attacked by six Zekes and a Hamp. In a twenty-minute engagement two enemy planes were shot down, but Lt. Grant M. Rea's B-24 caught fire and was getting out of control. To avoid a collision with others in

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his flight, Rea feathered his propellers and dropped out of the formation. Two Zekes strafed the five crewmen seen to parachute from the stricken bomber.[70]

Thereafter, Japanese naval airmen in the Palaus proved no more anxious for combat than their fellow army pilots in the northern Moluccas. The 5th and 307th Groups, hindered only by weather and attacked only by AA, returned to the Palaus daily (except 27 August, when weather prevented) through 5 September. In a total of 11 missions, the 2 groups sent out 394 sorties, only 23 of which failed to reach the Palaus, and dropped 793.6 tons of bombs. AA remained dangerous, shooting down a B-24 on 28 August, destroying a second on 1 September, and damaging a third so badly on 2 September that it had to be ditched with only four survivors. These missions resulted in the destruction of most of the major installations and building areas in the Palaus, especially Koror town, where 507 buildings were demolished. While SWPA intelligence estimated that the Japanese still had twelve fighters, twelve floatplanes, and three observation aircraft in the Palaus on 5 September, the local airstrips had been so badly cratered that they could be made operational only with extensive repairs.[71]

Meanwhile, the Fifth Air Force had begun attacks on the southern Philippines to prepare the way for the Third Fleet carrier strikes. Late in July Kenney had informed Whitehead that attacks against Davao airfields and port installations should begin as soon as possible.[72] Fearing that Japanese opposition to continued day raids on the area would become costly, Kenney had advised Whitehead to use his "snooper" force until he could stage a day attack in force. The 63d Squadron initiated such night raids on 5/6 August with a rather ineffectual single bomber strike on Sasa airdrome, six miles north of Davao. Planes from the 63d continued to harass the airdromes and harbor area around Davao during August, assisted by PB4Y's on reconnaissance missions. Captured documents indicate that these heckling raids frequently killed small numbers of military personnel, sometimes destroyed aircraft, and often wrecked buildings. Japanese resistance was ineffectual. Even on 20 August, when the 345th's B-25's raided Beo and Rainis villages in the Talaud Islands to cover low-level photography by the 17th Reconnaissance Squadron, only two inquisitive Japanese fighters appeared and they seemed reluctant to attack. This daylight

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raid was in easy fighter range of Japanese bases in southern Mindanao, but there was no reaction.[73]

Larger-scale attacks required more target information, and on 20–23 August F-5's covered southern Mindanao. Surprisingly enough, 163 Japanese aircraft were revealed on the 20 August photos, while similar coverage on 22 August revealed only 108 planes. The Japanese, evidently reasoning that bombers would follow the photo planes, had withdrawn northward. Most of this strength was concentrated at Likanan airdrome (a four-runway base twelve miles northeast of Davao), at Sasa airdrome (north of Davao), and Matina airdrome (a bomber base two and one-half miles southwest of Davao). Nine other airfields were in the area varying from operational to probably abandoned, the most important being Padada (thirty miles south-southwest of Davao), Daliao (under construction six miles southwest of Davao), and Buayan (at the head of Sarangani Bay). There was a seaplane base at Bassa Point. Davao, the second largest city in Mindanao, sheltered many Japanese troop concentrations, and nearby Santa Ana contained the docks and waterfront warehouses for Davao.[74]

MacArthur questioned Kenney again on 21 August regarding the state of preparation for a raid on Davao, reiterating his interest in having the "big wallop" take place as soon as possible to prepare for the carrier strikes and to stimulate sabotage and guerrilla resistance.[75] Whitehead had been hoping to use the two XIII Bomber Command heavy groups for an initial five-group raid. He had also been holding up the heavy attack until he could stage B-25's through Sansapor for a simultaneous photo and strafing mission against the Sarangani Bay area. Because the disappearing Japanese air forces made target selection difficult, Whitehead asked for permission to bomb Davao, but MacArthur, having received word that the Japanese hoped to exploit such attacks for purposes of propaganda, limited attacks in the Philippines to airfields, hostile installations, and shipping.[76] Harbor installations which might be of use to the Allies were to be spared as much as possible, and villages and cities were not to be bombed except with the express permission of GHQ.[77]

The tactical situation and state of the airfields at Sansapor limited the Fifth Air Force to its own heavy bomber resources, but on 1 September fifty-five B-24's of the 22d, 43d, and 90th Groups bombed dispersal areas at Matina, Likanan, and Sasa dromes. Over Matina AA

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was intense, heavy, and accurate, shooting down two 22d Group bombers; one burst killed a pilot and a gunner in another of the group's planes. Some ten enemy fighters attacked the 43d Group over Likanan, holing several of the bombers at a probable loss of two fighters. The three groups, with each plane loaded with 20-pound frags, had attempted to knock out dispersed aircraft; strike photos showed that they had destroyed twenty-two. Three squadrons of P-38's, staging through Sansapor, had accompanied the B-24's to within sixty miles of the target, but they had been turned back by a weather front. The next day the same groups, this time with effective fighter escort, flew back to clean up stores and personnel areas around the airdromes with 500-pound bombs. Twelve B-24's of the 43d Group bombed stores at Bunawan, near Likanan; 22 B-24's of the 90th Group dropped 196 bombs on the barracks at Likanan with good success; and 24 B-24's of the 22d Group dropped 216 bombs upon supply and personnel areas in the vicinity of Lasang, northwest of Likanan. Both AA and the several phosphorous bombs dropped in the vicinity of the 22d Group by high-flying enemy fighters were ineffective. Twenty-one P-38's of the 9th, 35th, and 36th Fighter Squadrons prevented any closer interceptions, and the 35th Squadron pursued and shot down a Zeke and a Lily. The V Bomber Command attempted a B-25 shipping strike at Davao harbor on the night of 2/3 September, using six volunteer crews of the 345th Bombardment Group; they staged through Middelburg, but only one of the B-25's managed to reach the harbor and it scored no more than a near miss on a merchant vessel.[78]

The coordinated medium and heavy bomber raid on southern Mindanao took place on 6 September. Forty-five B-24's of the 22d, 43d, and 90th Groups bombed the Santa Ana dock area with 1,000-pound bombs, while 11 B-25's from the 345th Group, which had staged to Middelburg the day before, made low-level strikes on Buayan airdrome. Although they found few planes on the field, the B-25's destroyed 4 of them and dropped their 100-pound parademos on barracks, warehouses, and hangars. The whole area was thoroughly strafed, and numerous Japanese soldiers were chased to cover with .50-caliber bullets. Twenty-nine P-38's of the 431st and 433d Squadrons, covering the Liberators, had an uneventful trip, but thirty-five P-38's of the 68th and 399th Squadrons, escorting the Mitchells, strafed Buayan as the bombers departed, and the 399th Squadron shot down a

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Topsy transport which tried to land at Buayan. After these 6 September strikes Whitehead, at the request of the Third Fleet, suspended all missions against southern Mindanao. The bomb tonnage dropped had not been as large as that desired by MacArthur; counting "snooper" and PB4Y tonnages as well as the daylight raids, only 366 tons had been dropped. But when the Third Fleet's carrier planes appeared over the area, they would find that the Japanese air forces had deserted their bases, evidently because of the Fifth Air Force action.[79]

Having completed the missions against Mindanao, the Fifth Air Force turned its medium and heavy bombers to the Celebes. This strangely formed island, roughly the shape of a "K" with the vertical stroke looped over the whole letter, lies between the Moluccas and Borneo. Although a single island it had been given a plural designation by early explorers who were puzzled by its peculiar conformation. To reach its western extremities would tax the range of B-24's from either Biak or Darwin, but its most important installations were located in the northeastern and southeastern peninsulas where even B-25's, staged at Noemfoor, could attack them. On the long northeastern peninsula which curls over the whole island, centering around Menado, the Japanese had built Langoan, Mapanget, and Sidate airfields. Japanese garrisons and some industrial activity had been noted in the towns of Menado (also headquarters of the Second Area Army), Gorontalo, and Tomohon. At the extremity of the northeastern peninsula, Lembeh and Bangka straits provided shelter for shipping, and Amoerang Bay, on the north coast of the northeast peninsula, was a shipping center. Less was known about the southeastern peninsula, but in addition to the old airfields at Kendari and Pomelaa the Japanese had developed five new airfields in the area—Baroe, Boroboro, Tiworo, Ambesia, and Witicola. As of 1 September the Japanese were believed to have 177 planes in the Celebes.[80]

A few B-24's and PB4Y's had bombed the Celebes earlier in August, but the first large-scale effort against the area was flown on 24 August by thirty-six B-25's of the 345th Bombardment Group, staging through Noemfoor. This mission successfully attacked merchant shipping in the Bangka and Lembeh straits, damaged the mine-layer *Itsukushima* with near misses, and strafed and bombed storage areas at Lembeh.[81] Except for reconnaissance planes and night-flying B-24's, the Celebes went free until 2 September chiefly because weather held off scheduled 345th Group strikes. On that date thirteen B-25's from

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the group tried to attack Langoan airfield, but when their fighter cover did not appear on schedule, the B-25's once again attacked shipping in the Lembeh Strait. On this mission the AA positions along the straits, aided by gunners on the damaged mine-layer, put up a curtain of flak which veteran pilots said was the most intense seen since Rabaul; two B-25's were shot down and two others so badly damaged that they were forced to land at Middelburg. This mission showed that the Celebes were too well defended for medium bombers. On the next day thirty-seven B-24's of the 22d and 43d Groups were sent to bomb the targets adjoining the Lembeh Strait: twenty-two 90th Group B-24's bombed dispersal areas at Langoan, destroying thirteen Japanese planes on the ground. Fighter cover was again delayed by weather, and the Japanese intercepted each of the three groups. Over the strait the interceptions were not closely pressed, but the 22d Group shot down two Tonys. The 90th Group was hotly contested over Langoan by some ten Zekes, Tojos, and Hamps, losing one B-24 but claiming two Japanese fighters in exchange.[82]

After these initial raids Japanese resistance wilted and Allied fighter cover began to function properly. On 4 September, when all strikes from Biak and Owi against the Celebes were canceled because of weather, twenty-three B-24's of the 380th Group from Darwin made a night attack on Kendari airdrome, setting a number of fires. On 5 September, fifty-eight B-24's from Biak and Owi, in a mission described as no more exciting than "taking a nine and a half hours . . . bus trip," returned to blast Langoan's dispersals, destroying or badly damaging seventeen Japanese aircraft on the ground. On 7 September fifty-three B-24's hit warehouses, factories, and army headquarters at Menado, and the next day forty-five B-24's bombed Langoan town and airdrome. A series of heavy bomber missions was flown against Mapanget, Langoan, and Sidate on 7–14 September, designed to knock out their strips with 1,000-pound and 2,000-pound bombs. Reconnaissance photos taken on 14–15 September showed that each of the three runways was so badly cratered that the few remaining Japanese planes in the northeastern Celebes could not be flown from them. At each airfield, however, the Japanese were busily filling up the craters, and the fields would require continuing attacks to insure the safety of Morotai. In all, this neutralization effort had required some 1,389 tons of bombs prior to 15 September.[83]

While FEAF long-range planes had been committed to attacks on

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the Palaus, southern Mindanao, and the Celebes, other shorter-range Allied units had been attempting to destroy the enemy airfields on the Vogelkop and on the left flank. Fifth Air Force P-38's, P-47's, A-20's, and B-25's—unopposed except for AA which shot down a B-25 over Namlea and two A-20's at Amahai on 10 September—repeatedly raided the enemy airfields on Ambon, Boeroe, and Ceram, dropping a total of 303 tons of bombs on these targets during the first 2 weeks of September. The 13th Air Task Force P-38's from Sansapor flew 172 P-38 sorties and dropped 119 x 1,000-pound and 53 x 500-pound bombs on the 2 Namlea fields during the same period. Missing only two days during 5–15 September because of weather, RAAF 22 and 30 Squadrons' Bostons and Beaufighters, flying from Noemfoor, kept Boela's airstrips cratered. Limiting their load to two 200-pound bombs, RAAF P-40's from Noemfoor stretched their radius to the Kai Islands for half-hour attacks on shipping and targets of opportunity. The 380th Group from northwest Australia continued its campaign, concentrating after 8 September on Ambon airfields. Following the 4 September night strike on Kendari, it hit Lautem town, Timor, on 2 and 12 September, Kai Islands dromes on 8 September, and Laha airdrome on Ambon on 10 September. At the same time, the short-range air units dropped some 676 tons of bombs on the airfields and hostile installations bypassed in the Vogelkop, displaying a great deal of ingenuity in running up the tonnage. A-20's from Hollandia, for example, were accompanied to Utarom by B-25's and bombed from medium altitudes on the B-25 lead ship. Other than two P-38's lost over Jefman to AA on 4 September (one of the pilots was rescued) there were no casualties. The importance of this effort was emphasized by the continued Japanese ability to sneak night raiders into Netherlands New Guinea. Taking advantage of moonlight, two raiders killed one man, wounded seven, and damaged five planes at Mokmer airdrome on 2 September; five days later, two raiders wounded one man and damaged five bombers on Owi. On 9 September about ten hostile planes raided Biak and Owi, killing three men and wounding twelve. Allied AA shot down two of these planes, a P-61 destroyed a "bogie" over Biak on 1 September, and other Allied night fighters drove off hostile planes over Sansapor on 10/11 September; but it was evident that the Japanese were still able to harass the Allied line of advance toward Morotai.[84]

During the first two weeks of September FEAF planes unleashed a

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stepped-up aerial attack on the northern Moluccas which sought to immobilize the Japanese garrison, destroy their logistic establishments, and knock out their airfields. The 5th and 307th Bombardment Groups, beginning on 7 September and continuing through D-day, sent 297 B-24 sorties to drop 881 tons of bombs almost exclusively on the enemy airfields. Concurrently, the Fifth Air Force used every type of combat aircraft available to soften the northern Moluccas and to isolate the island of Morotai. P-47's and P-38's dive-bombed villages, supply dumps, and airfields; B-25's made minimum-altitude sweeps, bombing and strafing airfields and other targets of opportunity up and down the coasts of Wasile Bay; and Noemfoor-based A-20's of the 417th Bombardment Group attacked Kaoe airdrome dumps on 11 September, losing one plane to AA—the only casualty of the two-week period of attacks on the Moluccas. To provide full measure of airdrome neutralization, Fifth Air Force heavy bombers attacked Kaoe drome on D-day, followed by thirty-one A-20's of the 417th Group which swept the field and the adjacent town. Altogether, Fifth Air Force units had put 362 tons of bombs into the Moluccas during 1–15 September. Morotai was hardly touched, partly to avoid giving away the target and partly because there were no Japanese installations worth much air effort on the island. The 38th Group sent their B-25's for minimum-altitude attacks against Morotai on 2 and 6 September, strafed and bombed a supposed radar installation on the northeast coast on 12 September, and swept the invasion area for the last time on 13 September. On D-day, shortly after the landings began, 2 B-25's sprayed the area, not with the bombs and bullets usual at landings in enemy territory but with 460 gallons of DDT insecticide.[85]

Meanwhile, the magnificent success of the Third Fleet had guaranteed Allied victories in the Palaus and Moluccas. Halsey had sent Task Group 38.4 to strike the Bonins between 31 August and 2 September; it had attacked Yap on 7–8 September; and it had arrived in the Palaus in time to relieve the other three groups of Task Force 38, which had been operating there on 6–8 September. These three groups, beginning attacks against Mindanao on 9 September, met next to no opposition in areas which had been bombed by the Fifth Air Force, and Carney, Halsey's chief of staff, wrote Sutherland that the "damned 13th Air Force has just about spoiled the war for our carriers, particularly at Yap. . . ."[86] Continued success against limited opposition

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next day caused Halsey to order Task Force 38 against the Visayas and Luzon; achieving tactical surprise over the Visayas on 12–13 September, it destroyed more than 300 Japanese planes. As agreed with SWPA, Task Group 38.1 was detached and moved southward for support at Morotai, striking Zamboanga, the Talauds, and Menado en route. But Halsey still was not through: having replenished Task Force 38 (less Task Group 38.4), he sent it against Luzon on 21–22 September. Before withdrawing, these groups repeated attacks against the Visayas and staged a long flight to catch Japanese shipping which had fled from Manila to Coron Bay. The total damages claimed against the enemy between 31 August and 24 September were phenomenal: 1,000 Japanese planes destroyed and over 150 ships sunk, at a cost of only 114 U.S. planes.[87]

These successes, added to information brought back by a carrier pilot rescued from Leyte that there were no Japanese on the island, led Halsey to make a startling proposition on 13 September. He suggested to Nimitz that he be allowed to cancel all of STALEMATE II except the capture of a fleet anchorage at Ulithi. He wished to turn over the forces so released to MacArthur for an immediate assault on Leyte which he would cover with carrier aircraft until airfields could be built ashore. This proposal, based on an overquick estimate of damages and erroneous intelligence from Leyte, might have succeeded, but, as events would show next month, only at extremely hazardous risks. Neither Nimitz, MacArthur, nor the JCS proved willing to eliminate the Palaus, but all were willing to release the forces required for the Yap phase of STALEMATE II so that they could be used by SWPA for the occupation of Leyte—with a target date set at 20 October instead of 20 December, and with all MacArthur's planned operations between Morotai and Leyte canceled.[88]

Preparatory operations for the landings in the Palaus had already begun when Halsey made his proposition to cancel STALEMATE. During the first week in August the 81st Division had been shipped from Hawaii to Guadalcanal, and, joining the 1st Marine Division in the Russells, it had been integrated into the III Amphibious Corps. On 4–8 September this task force had sortied from the Solomons; the Fire Support Group and the Escort Carrier Group (ten CVE's) had departed in time to arrive at the target area by 12 September, when, promptly at dawn, they had commenced bombarding Peleliu. Because of excellent Japanese camouflage (the Japanese persistently refused to

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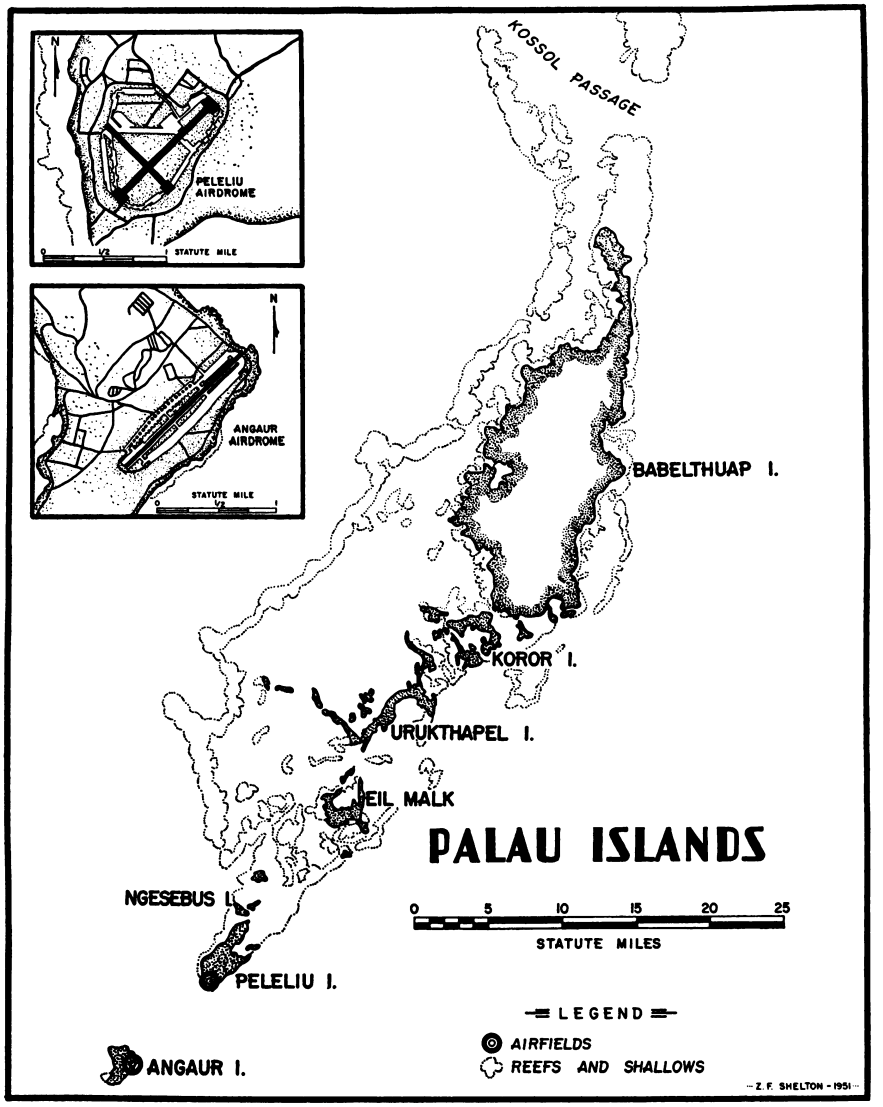
return fire and reveal their positions), most of the naval shells had to be fired blindly into the island. Four torpedo bombers and four fighter squadrons from the CVE's were in constant use. Covered by Allied



Air Forces searchplanes in its movement northward, the Western Task Force was standing off the Palaus on 15 September, ready for landings which proceeded as scheduled; ashore without unusual incident, the 1st Marine Division quickly captured the Japanese airfield.

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On 17 September, as soon as it could be determined that it would not be needed on Peleliu, the 81st Division, less one regimental combat team (RCT) which Halsey ordered held for the capture of Ulithi, attacked and easily overran the Japanese defending Angaur, ending all organized resistance on the island by 20 September.[89]

The ground advance on Peleliu, however, slowed up as the Japanese were pushed back into a series of fortifications honeycombing the rocky ridge—the Marines called it "Bloody-nose Ridge"—forming the backbone of the island. Against such cave fortifications, air support missions, flown by carrier pilots who had been primarily trained for attacks against naval units, offered only limited assistance. They tried napalm incendiary bombs to burn the Japanese out of their positions with small success, partly because many pilots dropped the napalm containers from too high altitudes and partly because the inflammable mixture was in too thin a solution. An AAF observer at Peleliu also noted that the carrier pilots began to strafe from 4,000 to 5,000 feet and pulled out of their diving angle at about 2,000 feet; dive bombers recovered at 3,000 feet as a safety measure from ground fire, although such fire usually ceased during an air attack. Relative ineffectiveness of such air support meant that the Marines had to root out and destroy Japanese positions, usually in expensive hand-to-hand combat. On 23 September one regiment of the 81st Division had to be brought to Peleliu to relieve the weary Marines.[90]

Elsewhere the troops met little difficulty. A force of Marines seized Ngesebus on 25 September, while the 323d Regiment of the 81st Division, supported by the escort carrier group, occupied Ulithi Atoll on 23 September without opposition other than extensive minefields. Halsey also seized Kossol Passage, and had it swept for possible use as a fleet regulating point. Although there would still be some mopping up of isolated enemy pockets, Halsey on 13 October turned the area over to Vice Adm. John H. Hoover, commander of Forward Area Central Pacific. Casualties as of that date had been very high: against 10,500 Japanese on Peleliu-Ngesebus and 1,500 on Angaur, the 1st Marine Division had lost 5,031 men killed, wounded, and missing, and the 81st Division had sustained 1,911 casualties.[91]

Because of the separation of the two objectives in the Palaus, engineer troops were attached directly to the two combat divisions for the execution of CINCPAC base-development plans until the function could pass to the garrison or island commanders. The III Amphibious

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Corps engineer found this procedure "most objectionable" since the combat divisions had little time or personnel for construction. The 1st Marine Division, with two naval construction battalions attached, was assigned the task of rehabilitating the Japanese fields on Peleliu and Ngesebus. The once-impressive airdrome on Peleliu was found in shambles, but despite initial delays in beaching the LST's containing most of their heavy equipment, the Seabees had one runway ready to receive Marine fighters on D plus 8 and for Marine bombers by D plus 20. Ngesebus airfield was so poorly built that it was not worth diversion of effort from Peleliu.[92]

The 1884th and 1887th Engineer Aviation Battalions, initially attached to the 81st Division, had the more difficult assignment of building facilities on Angaur for a heavy bombardment group within thirty days. On 17 September, the day of the invasion, the 1884th sent a surveying party with a combat bulldozer to begin clearing a center line for the strip, even though the area was still under fire. The whole area was covered with dense jungle growth, and a six-inch to two-foot deep ground surface of humus had to be stripped and replaced with coral. Nevertheless, a steel-mat runway, service apron, and warm-up area—minimum facilities for flying—were completed by 20 October. According to construction directives, a 32,000-barrel gasoline tank-farm should have been completed by D plus 30, but a critical tie-up in unloading over the beaches delayed this work, and not until 8 November did the storage capacity reach 12,000 barrels, an estimated week's supply for a heavy bombardment group.[93]

Deployment of the air garrisons to the Palaus, after the area was transferred to Forward Area Central Pacific, became the responsibility of Maj. Gen. Willis H. Hale, commander of the Shore-Based Air Force Forward Area. He supervised Maj. Gen. J. T. Moore, USMC, who was immediately responsible for land-based air operations in the Palaus. Prior to the arrival of land-based squadrons, three tender-based patrol squadrons and one air evacuation squadron were moved to Peleliu on 17 September. As soon as the strip on Peleliu could support them, three fighter squadrons, one night fighter squadron, and one torpedo bomber squadron, all Marine units, were flown in to undertake the local defense and neutralization of Japanese forces remaining in the Palaus. The long-range striking force scheduled for Angaur—the Seventh Air Force's 494th Bombardment Group—was unable to operate there in force until late November, although a Marine transport

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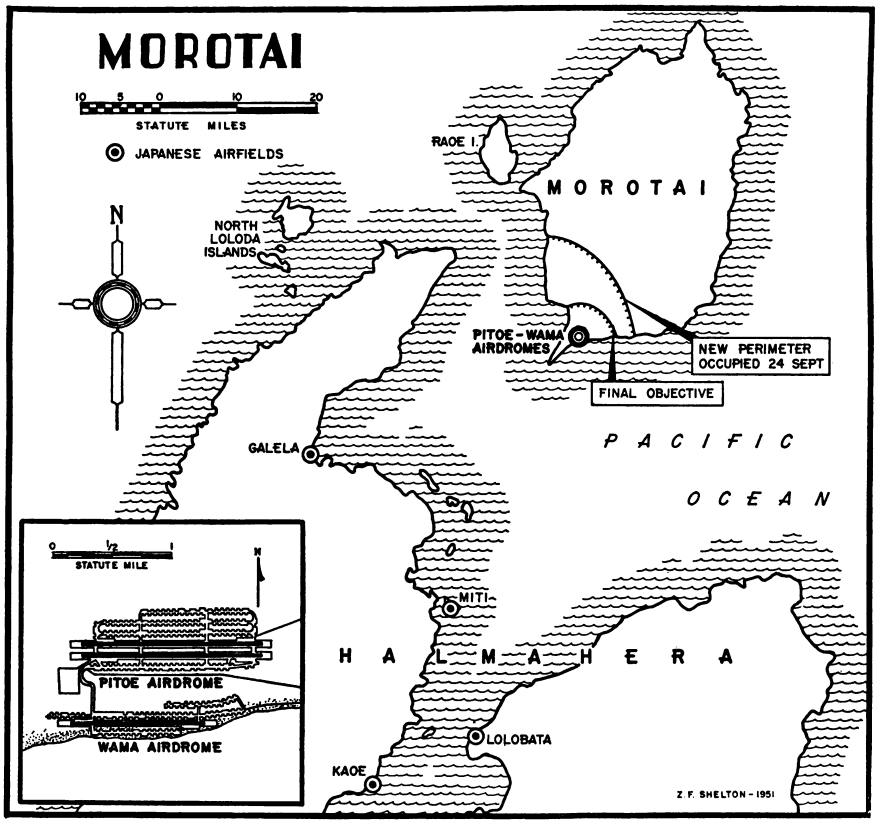
squadron had begun to use the field somewhat earlier. Thirteen B-24's of the 864th and 866th Squadrons, all the heavy bombers which could be maintained from limited gasoline stores, reached Angaur on 21–22 October. The other two squadrons would not arrive until November, and since the 494th was a new group never before in operation, its full effectiveness had to await shakedown missions and local orientation.[94]



The Palaus would thus be of no value in the aerial preparations for the invasion of Leyte nor for the fleet action which followed, but the field on Angaur did prove most useful as a staging and heavy bombardment base before the completion of the Philippines campaign.

Meanwhile, land-based air operations in support of the landings at Leyte Gulf depended on Morotai. Loading of the amphibious troops for the invasion of that island had begun during late August at Aitape, Hollandia, Maffin Bay, Biak, and Sansapor. Despite the strain on slender SWPA resources caused by loadings at so many places, the two

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attack groups had arrived at Aitape and Maffin Bay on 2–3 September for final rehearsals. The group at Aitape weighed anchor on 11 September, joined the other group off Wakde next day, and, keeping out of sight of enemy-occupied areas, moved up the coast of New Guinea. Cruiser and escort carrier groups joined on 14 September, and the combined force proceeded toward Morotai with four CVE aircraft on constant antisubmarine patrol. Using units from Biak, Noemfoor, and Sansapor progressively, FEAF maintained four P-61's on dawn and dusk patrols and sixteen P-38's on continuous day patrols over the convoy; P-61 night fighters, working in pairs out of Sansapor, covered the convoy all night on 14/15 September. All patrols were without incident. After excellent gun and air barrages, the 31st Division and the 126th RCT began unopposed landings at 0830 on 15 September, at once encountering the worst reef conditions ever met in any SWPA landing. Defying fissures which trapped their vehicles, the assault troops waded ashore, and by 1300 hours on D plus 1 they had established their perimeter defense line. Patrols were sent out to scatter small bands of Japanese, other parties seized offshore islands needed for radar sites, and the original perimeter was extended to include additional dump areas. By 4 October the Sixth Army terminated the ground campaign, reporting casualties of 30 killed, 80 wounded, and 1 missing against a Japanese loss of 104 killed and 13 captured.[95]

Direct air support for the ground operation was not needed. The fast carriers of Task Group 38.1 were released on D plus 1 without having been used, and the planes from the CVE's, aided after D plus 2 by torpedo boat patrols, had only to maintain air patrols over Morotai and to break up any possible Japanese efforts to slip troops across the narrow channel separating Morotai from Halmahera. To extend the SWPA search pattern and provide air-sea rescue, the Allied Air Forces moved the Catalina squadron VP-33, based on the seaplane tender *Tangier*, to Morotai on 19 September. Kenney agreed to release four of the escort carriers on 25 September in order to give them time to prepare for Leyte, and after their departure P-38 patrols from Sansapor supplemented the air defense.[96]

High-level decisions projecting an invasion of Leyte on 20 October demanded the utmost speed in the development of air facilities on Morotai. With little knowledge of the terrain on the island, SWPA and FEAF had been vague about timing and inexact about specifications, but they permitted Hutchinson wide latitude in selecting airdrome

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sites, in determining priorities for construction, and in calling forward air force units as facilities permitted. Engineer units coming into Morotai between D-day and D plus 15 were concentrated on the air facilities, except for one battalion which worked on roads and dumps. Survey of the abandoned Japanese field began on D-day, but the site, after some clearing, was less practicable than the good site at Wama and was set aside for crash landings. The strip at Wama, its completion delayed by torrential rains which prohibited work for 72 hours, had 4,000 feet of usable steel-mat surface on 4 October. On 21 September a second site had been located north of and parallel to Wama for a dual-runway bomber airfield, later called Pitoe. At Kenney's request, GHQ approved extension of Wama to 5,500 feet and authorized a regulation heavy bomber airfield at Pitoe; by 17 October 7,000 feet of the south runway at Pitoe, 1 taxiway, and 36 heavy bomber hardstands were open. Effort was increased on 18 October because of news that the Third Fleet had withdrawn support at Leyte,* and by 20 October Wama was nearing completion, with runway, taxiway, thirty-two hardstands, and six service aprons serviceable. At Pitoe seven new hardstands and four new service aprons had been added in the three days following its opening.†[97]

The first air force units ashore on Morotai had been the signal air warning (SAW) support aircraft parties and fighter control units which accompanied the assault forces. The 310th Bombardment Wing (M) Headquarters arrived on D plus 3, and between D plus 4 and D plus 16 the ground echelons of the following organizations debarked: 8th Fighter Group, 38th Bombardment Group, 418th Night Fighter Squadron, 35th Fighter Group, 82d Reconnaissance Squadron, and VB-101 and VP-146. Since FEAF had canceled the movement of the 17th Reconnaissance Squadron to prepare it for Leyte, these units completed the Fifth Air Force garrison. Of the Thirteenth Air Force units scheduled to take over at Morotai as the Fifth went north, only an advanced echelon of the air force headquarters had arrived on D plus 12. The 17th Photo Reconnaissance Squadron and the 5th and 307th Bombardment Groups (H) would not be brought into Morotai until after 20 October. Movement of these ground echelons into Morotai

* See below, p. 354.

† Men of the 931st Engineer Aviation Regiment, the 836th, 841st, and 1876th Engineer Aviation Battalions, would be surprised to learn that, by Navy account, the Morotai fields were "Seabee built." See Capt. Walter Karig, *et al.*, *Battle Report, The End of an Empire* (New York, 1948), p. 289.

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was on the whole well ordered, although in the shipping shortage the air force had been forced to accept Liberty and transport ships for the movement, and unloading at the beachheads was difficult. The ground echelon of the 35th Fighter Group, for example, arrived on 27 September but could not begin to unload until 5 October. Cargo damage ran high; the advanced echelon of Thirteenth Air Force estimated that 15 per cent of its cargo was damaged beyond repair in unloading. After 15 October, with one floating Liberty-ship pier and two coral jetties completed, the unloading of the vessels became easier.[98]

These delays were not especially significant because all were ashore before facilities permitted aircraft to be brought forward. When Wama was opened to fighters on 4 October, Hutchinson immediately called up the P-38's of the 8th Fighter Group; enough were on hand the first day to permit him to relieve the remaining CVE's. The air echelon of the 418th Night Fighter Squadron, newly equipped with P-61's, arrived next day. Headquarters and two of the flights of the 2d Emergency Rescue Squadron moved to Morotai on 4–10 October. Air echelons of the 38th Bombardment Group, called forward by Col. John T. Murtha, Jr., who had relieved Hutchinson as 310th Wing commander on the 16th, arrived at Pitoe on 17 October. Two squadrons of the 35th Fighter Group brought their P-47's to Wama the same day, and next day the aircrews of the 82d Reconnaissance Squadron, flying P-40N's instead of their old P-39's, flew to Wama. By 19 October Murtha had located the Venturas of VP-106 and the PB4Y's of VB-101 at Pitoe.[99] Such was the air deployment at Morotai on the eve of the invasion at Leyte Gulf.

Even though they correctly anticipated both attacks, the Japanese opposition to the twin invasions—with the exception of a tenacious ground defense on Peleliu—was meager. As early as 6 August the Fourteenth Area Army in Manila, charged with the defense of the Philippines, had predicted that Allied strategy would aim at the recapture of Mindanao via the Palaus and the northern Moluccas. The Japanese Thirty-fifth Army, defending the southern Philippines, had estimated on 9 September that Morotai and Talaud would be invaded within the month. Imperial Japanese Naval Headquarters in Tokyo on 7 September warned against an attack on the Palaus and the Moluccas, and a Japanese plane observed the invasion convoys about Noemfoor on 11 September. But there was little that the Japanese could do, and, according to postwar interviews, they virtually wrote off both objec-

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tives in favor of a vigorous defense of the Philippines. Loss of carrier aircraft in the Marianas made defense of the Palaus impracticable, although the ground garrisons there were expected to put up a good fight. Japanese orders captured on Morotai revealed that during August and September the enemy had hoped to deceive the Allies into thinking the island was heavily defended; at another date they had proposed to "decoy the enemy to Morotai Island and destroy them." The Fourth Air Army planned to defend the northern Moluccas by shuttling aircraft between Davao and Menado, attacking Morotai on each trip. Similarly, planes from Kendari and Makassar were to move to Ambon, operate against the invasion area, and land at Menado. According to a postwar interrogation, planes were actually being concentrated at Davao to effect the plan, when on 8 September a coast watcher erroneously reported an Allied landing in Davao Gulf and caused cancellation of the plan. At any rate, Third Fleet neutralization of Japanese air strength in the Philippines made such tactics impossible.[100]

Thus by necessity the Japanese were limited to sporadic air attacks on the Palaus, which, with the exception of the severe strafing of a destroyer on the night of 1 October, did little damage. Night attacks on Morotai were more vigorous, but they were never of sufficient force to endanger the success of the operation or use of the base. Since the island was mountainous to the north and surrounded by land masses to the south, Allied radars could not operate effectively, and the Japanese raiders could sneak in and bomb the concentrated airfield area with little warning. Between 15 September and 1 February the Japanese sent 179 sorties, in 82 raids, over Morotai, mostly on moonlight nights between 0300–0500, a timing indicating that they staged from Ceram or the Celebes, landed on Halmahera fields (which, despite repeated bombings, the Japanese persistently repaired), and then took off about midnight for Morotai. Fifty-four raids caused no damage, but one notable raid on 22 November resulted in two men killed, fifteen injured, fifteen planes destroyed, and eight damaged. Altogether, nineteen men were killed, ninety-nine were injured, forty-two aircraft were destroyed, and thirty-three damaged. P-61's and P-38's, the latter with searchlight cooperation, were employed against the raiders, but the cramped maneuver area (the night fighters had to make their interceptions in the short time before the Japanese planes reached a gun-defended area) gave most of the twenty-six definite

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kills to the Allied AA. After the end of January, the Japanese suddenly gave up their night attacks against Morotai, and there was only one more raid on the night of 22 March.[101] By this time Morotai, obviously a poor base to defend, had fulfilled its purpose to the Allies.

The Balikpapan Raids

SWPA airmen had long coveted the Japanese their uninterrupted use of the refining and oil center at Balikpapan in Borneo, second in production only to Sumatra's Palembang in the entire NEI. By September 1944 the Netherlands Military Oil Intelligence Service estimated that Balikpapan refineries were processing some 5,240,000 barrels of crude oil annually and were turning out diesel fuel, motor fuel, aviation gasoline, and lubricating oil. True, the Japanese had an estimated two years of fuel stores in the homeland, but a reduction in aviation fuel and "black oils" produced at Balikpapan would disrupt their military operations in the forward areas rather severely.[102] After a few 380th Bombardment Group strikes on Balikpapan and Soerabaja during the late summer of 1943, Kenney had noted that within two weeks the "Japs were short of aviation fuel at all of their fields from Ambon to Wewak and even at Palau and Truk."[103]

Judging NEI oil installations to be "the finest and most decisive set of targets for bombing anywhere in the world," Kenney had tried diligently to get some B-29's assigned to him for operation from the Darwin area.[104] Armed with the SEXTANT planning paper, he had built a VHB base at that place, and had urgently requested that the AAF initiate VHB attacks on the NEI from northwest Australia, a request which both Nimitz and MacArthur had supported.[105] Giles, while in Australia, had been persuaded to propose that FEAF be permitted to borrow two XX Bomber Command groups from the CBI and to employ two XXI Bomber Command groups while they were awaiting movement to the Marianas,[106] but this proposition, like Kenney's request a month later for just two B-29 groups to bomb Balikpapan, had been refused by the AAF.[107]

Failing to get B-29's, Kenney, Streett, and Whitehead made plans during August 1944 to employ B-24's from Netherlands New Guinea bases against Balikpapan. They had originally intended to wait until Mar airdrome at Sansapor could be lengthened to take B-24's. Streett, however, mistrusting the plan to place Fifth Air Force heavies in such

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an exposed place, had suggested that he be permitted to employ the two Thirteenth Air Force heavy groups from Noemfoor in a series of strikes at Balikpapan. Kenney agreed to the proposal, and Whitehead offered to furnish the Fifth Air Force's three heavy groups when Streett needed them.[108] Streett accordingly moved an advanced echelon of his headquarters to Noemfoor and opened his command post there on 23 September; on 1 October he assumed command of the air garrison at Sansapor, using the XIII Fighter Command as the local headquarters there vice the 13th Air Task Force, simultaneously dissolved. XIII Bomber Command with its 5th and 307th Bombardment Groups moved to Kornasoren drome, Noemfoor, on 18–28 September.[109]

Planning the Balikpapan raids was complicated by the extreme distance of the target—1,080 nautical miles—from Noemfoor. Considered by itself the distance was not an obstacle until a bomb load of 2,500 pounds and conservative amounts of ammunition and gasoline were included in the plans. After careful tests, the Thirteenth Air Force prepared rigid cruise charts for fuel conservation and allowed each aircraft 3,590 gallons of gasoline; 40 per cent of the normal ammunition load was permitted. The Fifth Air Force, to be called on for support on the first, third, and fourth raids, preferred to remove all excess weight from its planes—including armor plate and the lower turret—rather than sacrifice ammunition. Fighter cover, in view of the long distance from Sansapor (936 miles) and Morotai (845 miles) to Balikpapan, would not be immediately available, but the Thirteenth Air Force, long used to unescorted missions, was not particularly apprehensive at first. Take-offs at Kornasoren airdrome, which had only a single runway, would have to be managed with exceptional care if the groups were to be able to get to their rendezvous points on schedule. Finally, rescue services had to be coordinated: a submarine was to lie five miles off the coast of Borneo, and Catalinas were to orbit along the mission route to pick up downed crews.[110]

Selection of targets and bombs was carefully considered. The Netherlanders, who had built many of the installations, picked as primary targets: 1) the Pandansari refinery, a new and modern plant essential to distillation of aviation gasoline; 2) the cracking units, a central plant for the area upon which all the refineries depended for gasoline refining; and 3) the Edeleanu plants, required to produce sulphuric acid for the solvent treatment of aviation gasoline. Target folders, based on photos of these installations taken on 3 August, were prepared. On the

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basis of MAAF experience at Ploesti and in Italy, Thirteenth Air Force operations analysts decided that 250-pound bombs would be the proper weapon, reasoning that they would provide wide coverage, fracture oil containers, and fire the installations. For the first two raids the Thirteenth Air Force would use these bombs, but thereafter would turn to the heavier ordnance carried by the Fifth Air Force from the beginning.[111]

Fifth Air Force units struck Celebes targets, twice raiding Kendari, while the Thirteenth was setting up its establishment on Noemfoor. While awaiting movement from Wakde to Noemfoor, the 5th Group sent several raids to the Ambon-Boeroe-Ceram area. Both efforts sought to beat down opposition along the route to Borneo. By 29 September the 5th had completed its movement to Kornasoren, and that afternoon the 90th Group staged its planes up from Biak; all was ready for the first strike to Balikpapan. At 0040 hours on 30 September the first B-24 of the 5th Group roared down the runway at Kornasoren and disappeared into the darkness. Planes of the 307th and 90th Groups followed at one and one-half minute intervals until seventy-two of the heavily loaded bombers were airborne. Nine hours later, between 0933 and 0940 hours, the twenty-three planes of the 5th Group which had made the group rendezvous were over the Pandansari refinery at Balikpapan. After a last-minute change in heading to avoid cumulus drifting over the target, they placed 60 per cent of their bombs on the Pandansari refinery. When the twenty-three B-24's of the 307th Group arrived five minutes later, the refinery was almost completely covered, and seven planes bombed it by radar, five bombed the paraffin point, and eleven dropped their bombs through the undercast without aiming. The 90th Group's twenty-three planes, last to arrive, found solid cloud cover over Balikpapan, and only one of the squadrons attempted to bomb the target, on ETA. Bomber crews had been briefed to expect a strong AA reaction, but no one had foreseen that the Japanese had been hoarding one of their best naval air units for the defense of Balikpapan. These pilots were both calm and experienced. Two of them had picked up the bombers at the coast of the Celebes and had flown with the Liberators to Balikpapan, keeping discreetly out of range, obviously spotting for the AA and perhaps coordinating fighter interceptions. In all, the 5th Group lost three B-24's shot down by fighters or AA, while the 90th Group lost one B-24. The three groups claimed to have destroyed nine of the hostile fight-

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ers. Despite the losses, this strike had demonstrated that long-range missions to Balikpapan were practicable; there had been few turnbacks, most of the planes having made their return to Noemfoor with a little gasoline, and the cripples had been able to land at Sansapor and Morotai.[112]

On 3 October the 5th and 307th Groups went back to Balikpapan. According to the operations plan, the two groups were to bomb separately, each divided into two twin-squadron sections. Each of the sections was supposed to go over the target in javelin-down formation from 13,000 to 15,000 feet. The 307th Group, leading for the day, managed to get twenty of its planes over Balikpapan, and most of them scored hits on the Pandansari plant. Some forty Japanese fighters intercepted, however, beginning five minutes before the B-24's bombed and continuing all the way back to the coast of the Celebes. Assisted by AA, these fighters shot down seven B-24's, at a cost of twenty-four of their own number. In the hour-and-ten-minute interception, most of the B-24's ran short of ammunition, and when the Japanese broke off, two planes were entirely out. Meanwhile, the 5th Bombardment Group's planes, contrary to briefing, joined their sections closely at the rendezvous, whence they flew abreast, each section javelin-down and as close together as possible. The Japanese largely avoided this formation, and it encountered no losses. Eighteen B-24's bombed the Edeleanu plant and one bombed the Pandansari refinery. As on the preceding mission most of the surviving planes returned to Noemfoor and cripples to Morotai and Sansapor.[113]

Some change in tactics was evidently necessary, for never before had the 307th Group had such damages and losses. Streett, taking his cue from the success of the 5th Group, introduced each of his B-24 groups to the combat box formation. On 5–7 October he had each group fly two simulated bombing missions against P-47 interceptors, and he sold the crews on the new formation. Streett also borrowed the three Fifth Air Force groups for the next raid: they were to fly over the target at medium altitude and draw the AA while the Thirteenth Air Force went over at high altitude and took the fighters. Fifty P-47 pilots, perceiving the need for cover over such a hotly contested target, approached Kenney with a proposition that they be permitted to escort the heavies to Balikpapan, fight it out over the target and then fly back to a predetermined spot in the Celebes, bail out, and trust that they would be picked up by Catalinas. Fortunately, however, there

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would not be need for such heroic measures, for experimental long-range fighter flights under way in the SWPA during the spring and summer would now pay off. By attaching a 310-gallon tank under one wing and a 165-gallon tank under the other, new model P-47's from Morotai and P-38's from Sansapor or Morotai could make the flight to Balikpapan with a little gasoline to spare. Such a long flight would be hard on the pilots, but, by rigid adherence to a cruise-control chart and by certain stimulants, they could both get to the target and maintain a sufficient degree of alertness to engage fresh enemy pilots in combat. It was planned that the 40th and 41st Squadrons, with their P-47's, sweep the sky above Balikpapan clean of enemy fighters shortly before the bombers arrived; the 9th Squadron, with P-38's, was to escort the bombers. In addition, 43d Squadron "snoopers" were to harass the Balikpapan defenses and keep the Japanese pilots awake at night, and, shortly before the bombers were due to arrive, the 868th Bombardment Squadron was to have a "snooper" in the area dispensing "window" to dislocate the radar defenses and to get the Japanese fighters up on a false mission.[114]

The first phases of this mission took place on 8–10 October, approximately as planned. Seven 43d Squadron B-24's harassed Balikpapan on the night of 8/9 October and five on the night of 9/10 October. Between 0832 and 0900 on 10 October, an 868th Bombardment Squadron B-24 dropped 1,000 pounds of window on a course leading to within sixty miles of Balikpapan, and between 1010 and 1045 sixteen P-47's appeared over Balikpapan at about 20,000 feet. Pouncing down on twenty-five to thirty-five hostile fighters, they shot down twelve of them at a loss of one P-47. According to schedule, the two Thirteenth Air Force groups should have gone over the target immediately prior to the Fifth Air Force groups; within ten minutes all of them were supposed to have completed their runs. Arriving at their rendezvous first, however, the Fifth Air Force wing delayed as long as possible and then proceeded to the target. The 90th Group with twenty-one B-24's divided its bombs between the Pandansari and Edeleanu refineries, at the same time attempting to beat off twenty-five to thirty Japanese fighters. In this engagement one of the B-24's was exploded by a phosphorous air-to-air bomb, but the group claimed sixteen Japanese fighters destroyed. The 22d Group, with eighteen B-24's reaching Balikpapan, placed most of its bombs on the Pandansari target, but a vigorous interception caused inaccuracies. One 33d Squadron B-24 was so badly damaged by enemy 20-mm. fire that it crash-landed on

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Batoedaka Island, but before going down it destroyed six of the swarm of Japanese fighters which were attempting to hasten its demise. A Zeke rammed another B-24 and caused it to explode, and one other was crippled by fighters, which then ganged up and shot it down. Altogether, the 22d Group claimed nineteen hostile fighters definitely destroyed. By this time the Japanese venom was somewhat expended, and the nineteen B-24's of the 43d Group bombed the paraffin refinery and surrounding storage area without loss, claiming thirteen enemy planes destroyed. When the 5th Group's 24 planes came over at about 20,000 feet, the Japanese were not eager and the gunners managed to shoot down only 1 of 15 making halfhearted passes. The 5th Group managed a good strike on the paraffin and lubricating oil plant. A few minutes later, twenty-five of the 307th Group's B-24's bombed the cracking plants, and neither the B-24's nor seven to ten hostile fighters sustained any serious damage in the aerial engagement which followed. At the same time that the Thirteenth's planes came over, the eleven P-38's of the 9th Fighter Squadron were over Balikpapan. Of sixteen fighters intercepted, they shot down six with no losses; Maj. Richard I. Bong, leading AAF "ace" and supposedly in retirement as a combat pilot, had flown the mission and shot down his twenty-ninth and thirtieth victims.[115]

The next mission scheduled was virtually a repetition of this raid, with the addition of XIII Fighter Command P-38's from Sansapor. Single "snoopers" attacked Balikpapan on the nights of 12/13 and 13/14 October, and the major attack was made on 14 October. Promptly at 1020 the high-altitude fighters, fifteen P-47's of the 40th and 41st Squadrons, appeared over Balikpapan, shooting down nineteen Japanese fighters; the 41st Squadron lost two planes over the target, one of which was shot down by P-38's. Two of the 40th Squadron planes failed to make it back to Morotai because of mechanical failures, but their pilots, as well as the pilot of the plane shot down by P-38's, were rescued by Catalinas. The Fifth Air Force wing—a "V" formation made up of group diamonds and led by the 90th Group—took forty-nine B-24's, each loaded with one 500-pound and two 1,000-pound bombs, over the Edeleanu refinery precisely on schedule; a few planes had difficulty releasing their heavy bombs, but most of them were successful. Interceptions were not pressed vigorously, but the bombers claimed nine victories at the cost of one B-24. Another B-24 was lost from unknown causes somewhere en route to Balikpapan. Thirty-one P-38's of the 9th, 80th, and 432d Squadrons, es-

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corting the heavies, accounted for sixteen hostile fighters. Forty-nine 5th and 307th Group B-24's, flying in two-group boxes, passed over the paraffin and lubricating oil works a little late, but they plastered the target with 500-pound bombs. Interceptions being nominal, no Liberators were lost, but two hostile fighters were claimed as destroyed. The XIII Fighter Command had sent forty-two P-38's to cover these bombers, but only six—those from the 68th Squadron—got through to destroy two hostile fighters which were bothering the Liberators. This strike was the first really successful blow of the series, and MacArthur sent his commendation for a magnificent strike.[116]

This, however, was also to be the last effective strike against Balikpapan, for the last strike of the series, made by the 5th and 307th Groups on 18 October, was largely thwarted by weather. Fifty-two of their bombers found Balikpapan completely covered by clouds and dropped their bombs by ETA. Seventy-five XIII Fighter Command escorts started from Sansapor but only eight reached Balikpapan; since no Japanese planes appeared, however, there was nothing for them to do.[117] This anticlimactic mission ended the Balikpapan raids, for the full strength of the Fifth and Thirteenth Air Forces was now required forward in the Philippines.

In five raids the Fifth and Thirteenth Air Forces had put 321 B-24's over Balikpapan, had dropped 433.3 tons of bombs, and had provided 66 P-38's and 30 P-47's over Balikpapan to cover the heavies. In the process, they had lost twenty-two B-24's, three P-38's, and six P-47's. Not all of the personnel on these planes, however, had been killed, for the Navy and AAF Catalinas and the submarine *USS Mingo* had been spectacularly successful in picking up the downed flyers: they had saved sixty combat crewmen. Possibly the greatest gain for the Allies was the resultant experience in long-range missions, experience which would be of value in the Philippines campaign. Intelligence officers recognized, however, that the bombing campaign had only scratched the oil targets at Balikpapan. The Pandansari refinery was out of action but could be repaired; the Edeleanu plants would require complete rebuilding; installations producing diesel oil and lubricants were damaged but could be repaired in a short time. The Japanese could, and would, be able to get the refineries operating again in a short time and without too large a reduction in their annual output.[118] But by this time the Allies would have seized the bases in the Philippines needed to blockade the whole Netherlands East Indies.

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CHAPTER 11

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MEN AND WEAPONS

BECAUSE of the priority of personnel and equipment accorded the war in Europe, SWPA had never had an overabundance of logistical support. "All personnel," wrote one squadron commander in September 1944, "obviously feel they are in a low priority air force and are resigned to the fact that new equipment gets to us last, if at all."[1] Yet logistical difficulties had never been permitted to curtail the tempo of SWPA's attack. If there were personnel shortages, men had to fight longer; if replacement equipment did not arrive in desirable quantities, existing materiel had to be repaired and modified to fit new situations. While increasing American production and training permitted FEAF to get a little "fat" during 1945, it was never so well supplied with men and materiel as to be free of the necessity for ingenuity.

Despite casualties in the Philippines, FEAF showed an increase in over-all assigned strength from 16,914 officers and 156,684 enlisted men on 31 August 1944 to 21,387 officers and 161,073 enlisted men on 30 June 1945. This total assigned strength, however, counted all military personnel en route to and from the United States, as well as what FEAF called the "Zero Command," or AAF personnel in units assigned to theater Army Ground Forces and Army Service Forces. In an accounting of its "operating strength," or personnel assigned to AAF units, on 25 June 1945 FEAF computed a total operating strength of 148,334: 72,463 in the Fifth Air Force, 28,565 in the Thirteenth Air Force, 25,570 in FEASC, 15,416 in FEAF units, and 6,320 unassigned casuals.[2]

A substantial portion of the increase of FEAF personnel between August 1944 and June 1945 came with the assignment of new tactical units and service organizations. At the end of August 1944 the Fifth Air Force was composed of four heavy bombardment groups (22d,

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43d, 90th, and 380th), two medium bombardment groups (38th and 345th), three light bombardment groups (3d, 312th, and 417th), six fighter groups (8th, 35th, 49th, 58th, 348th, and 475th), four troop carrier groups (317th, 374th, 375th, and 433d), two reconnaissance groups (6th Photo Reconnaissance and 71st Reconnaissance), two night fighter squadrons (418th and 421st), and one emergency rescue squadron (3d). The smaller Thirteenth Air Force had two heavy bombardment groups (5th and 307th), one medium bombardment group (42d), two fighter groups (18th and 347th), one photo group (4th), one troop carrier group (403d), one low-altitude bombardment squadron (868th), one night fighter squadron (419th), and one emergency rescue squadron (2d). By June 1945 both air forces had added new tactical units, the Fifth Air Force having gained an air commando group (3d), a night fighter squadron (547th), a combat cargo group (2d), and an emergency rescue squadron (6th), while the Thirteenth Air Force received a night fighter squadron (550th).

Replacement and Training

Of all personnel problems, that of maintaining strength and efficiency in a theater of operations characterized by a tropical climate, few evidences of civilization, strenuous fighting, and remoteness from the United States remained difficult throughout the war. Replacement of combat crews, General Kenney wrote Washington in March 1944, was giving him "some bad headaches." The Fifth Air Force was allotted one crew per aircraft with a 15 per cent reserve for all plane types except B-24's, which were allotted two crews per airplane. Monthly replacements were supposed to arrive at a rate of 15 per cent of assigned aircrews, and since Arnold had advised against any arbitrary determinants for relief from combat, Kenney had been selecting crewmen for rotation to the U.S. entirely on the basis of combat fatigue. He had observed, however, that most fighter and bomber crewmen were "beginning to look a little foggy" after 300 combat hours. Yet, with a maximum of 15 per cent monthly rotation (a figure which also had to cover casualties), B-24 crews would have to fly 656 hours in a period of 20 months, P-38 pilots a total of 561 hours, and light and medium bomber and P-47 crews a total of 300 to 325 hours before they could expect relief. Kenney consequently asked the AAF to double the monthly replacement rates for B-24 and P-38 crews lest they be taxed beyond their endurance.[3] In April the AAF promised to increase fighter pilot allocations to 18 per cent beginning in May, to

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30 per cent between July and October, to 35 per cent between November and February, and to 18 per cent thereafter. Heavy bomber crew replacement would continue at 15 per cent until November, when it would be increased and stabilized at 30 per cent.[4]

This action promised little immediate relief and concerned only two categories of crews. Troop carrier crewmen could hope for only 7½ per cent monthly replacements, a rate not often met; by March 1944 Brig. Gen. Paul H. Prentiss, commanding the 54th Troop Carrier Wing, noted with alarm that many of his crewmen regarded surgeons' certificates of combat fatigue as the only way to leave the theater "short of going home in a pine box."[5] By July one fighter squadron observed that many of its older pilots had more than 500 combat hours and 14 months in the theater.[6] Since the speed-up of the attack during April and May had taxed B-25 crews more severely than other types, by June the 345th Group had only twenty-four out of seventy-six assigned crews available for combat while the 38th Group had only twenty-three of sixty-seven crews able to fly.* The other crews had been grounded by combat fatigue, and Whitehead sympathetically described the crews of both groups as "practically punch drunk."[7] Believing that "a half strength squadron of willing boys is better than a full strength squadron of worn out ones," Kenney sent nearly 600 aircrewmen home during July.[8]

Even an enlarged allocation of aircraft and crews by the AAF in August fell short of the promise of full strength for FEAF by the end of 1944, and the actual flow of replacement crews during the latter half of that year† failed to fulfill the allocations.[9] FEAF therefore re-

* In an effort to alleviate medium bomber crew shortages during the fall of 1944, FEAF received a full group of B-25 pilots fresh from advanced flying schools.

†COMBAT CREWS RECEIVED BY FEAF, JULY–DECEMBER 1944

Type	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
B-24	76	19	71	69	50	109	394
B-25	73	53	26	24	20	48	244
A-20	86	64	22	39	12	56	279
P-38	42	101	5	0	25	92	265
P-47	50	97	73	0	0	0	220
P-51	0	0	0	0	25	2	27

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mained short of combat crew personnel while the Philippine operations brought increased casualties, particularly among light and medium bomber crews. During January 1945, for example, the 417th Bombardment Group lost its group commander, two squadron commanders, and so many of its prospective leaders that there was no pilot in the group with sufficient experience to replace these men.[10] During the first half of 1945 the AAF increased its allotments to FEAF, but the augmentation ran most heavily to fighter pilots, as is shown in the following chart:[11]

COMBAT CREWS RECEIVED BY FEAF, JAN.–JUNE 1945

Type	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Total*
B-24	95	35	87	64	64	15	360
B-25	42	64	49	47	41	43	286
A-20	49	8	28	72	36	36	229
P-38	138	22	127	89	80	33	489
P-47	66	8	18	12	37	24	165
P-51	0	67	145	86	26	73	397

Reduced casualty rates in most plane types toward the end of the assault phase of the Luzon campaign left FEAF with a surplus of fighter and transport crews. By May 1945 it was deficient only in light and medium bomber crews, by August 1945 only in light bomber (both A-20 and A-26) crews.[12]

Based upon its expected flow of replacements, FEAF drafted a rotation policy for combat crews during the summer of 1944. Kenney first proposed to send aircrewmen back to the U.S. for 30 to 45 days' rest after a number of combat hours ranging from 200 for light bombers to 1,000 for troop carriers, but the AAF disagreed, having had experience that temporary rest in the U.S. "merely whetted the desire of the individual for permanent rotation."[13] On 18 September 1944 FEAF announced a standard for rotation: 200 combat hours for A-20's, 250 for B-25's, 300 for photo aircraft and reconnaissance B-25's, 300–350 for fighters, 400 for B-24's, and 1,000 for transport crews. These were minimum combat flight times, and rotation of a crewman remained contingent upon arrival of replacements and a

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flight surgeon's certificate that the crewman required rehabilitation in the U.S.[14]

Difficult as was this problem of combat crewmen, who seldom remained in the theater more than fifteen months during the last two years of the war, a greater one was presented by ground personnel: they often witnessed a complete turnover of flying personnel while they "sweated it out" without even the hope of relief.[15] Skeptics spoke of the "Golden Gate in '48," while cynics contributed "Join Mac and never come back." Any rotation plan for ground crews was necessarily complicated by the large number of men, the long distance from the U.S., the constant shortage of shipping, and the continued undermanning of the air command. As late as 31 August 1945 FEAF was deficient in its "operating strength" by 2,159 persons.[16] Shortages often assumed critical proportions in the skilled ranks; the 65th Bombardment Squadron reported in September 1944 that it was so hard pressed for mechanics that it was using truck drivers for aircraft and engine repair. As of 31 August 1945 FEAF was seriously short in enlisted armament and ordnance (14.7 per cent), transportation (14.2 per cent), and utility and repair (13.8 per cent) specialties.[17]

The Thirteenth Air Force had inaugurated a system of returning ground personnel to the U.S. in March 1944 while still under the administrative direction of the U.S. Army Forces in South Pacific Area (USAFISPA).* Quotas for permanent rotation and thirty-day leaves or furloughs were allotted by USAFISPA and allocated by lottery. Since men had to be selected by percentages within each grade according to the total air force strength in each grade, there were inevitable inequalities. Beginning in May 1944 the Thirteenth was permitted to select personnel for rotation based upon dates of departure from the U.S., the only restriction being that not more than 20 per cent of any organization be returned on a monthly quota. The quotas allotted amounted to approximately 1 per cent of the total ground strength of the air force.[18] Based upon a USAFFE directive, the Fifth Air Force announced on 5 April 1944 that ground personnel who had served faithfully and continuously overseas for at least eighteen months might be selected for return to the U.S., with preference to those with six or more months' service in the islands north of Australia.[19]

* USAFISPA and USAFFE were the Army administrative headquarters in the SOPAC and SWPA theaters. See Vol. IV, 32–33, 648.

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This Fifth Air Force regulation, continued as policy by FEAF, made many eligible for rotation, but the monthly quotas were exceedingly small. The entire June–August quota for the 54th Troop Carrier Wing, for example, was 1 officer and 5 enlisted men; the Thirteenth Air Force received an October quota of 7 officers and 180 enlisted men for its units.[20] At the quota rates in effect during 1944, rotation of FEAF ground personnel would have required more than eight years for a complete turnover.[21] FEAF would have liked to replace all men at the end of two years' service in the theater, a time at which it felt that combat efficiency began to deteriorate sharply, but no such plan could be effected in December 1944 when FEAF formally recommended it to USAFFE.[22] By July 1945 approximately one of every four nonflying enlisted men in the FEAF had more than twenty-four months in the theater. Even with the announcement of the War Department adjusted service rating score system that month, 65.9 per cent of FEAF's nonflying personnel with more than two years overseas service still were ineligible for return to the U.S.[23] After a special study, the SWPA Air Evaluation Board concluded that "the rotation program as executed in the SWPA had a more adverse effect on morale than any other factor."[24] But, as the war ended, FEAF still had little hope of increasing its efficiency through rotation even with the prospect of liberal redeployment from Europe.

Fitting the replacement personnel into its combat and service units presented another problem for FEAF. Under the optimistic assumption that most nonflying replacements would be qualified in their MOS job assignments, FEAF had no theater training program for ground personnel. The 22d Replacement Depot simply screened, processed, gave a few orientation lectures, and assigned replacements to units needing them, all within forty-eight hours if there were no complications. When the replacements had been misclassified at the overseas replacement depot in the U.S.—as was the case with approximately 10 per cent of them—the orderly flow of men in requisitioned specialties was disrupted.[25] After assignment to a unit, the replacements received such on-the-job training as their organizations could provide. This was general policy, but a sharp increase of signal aircraft warning unit fillers preparatory to the Philippines campaign caused an exception. FEAF activated the 5275th Aircraft Warning Replacement Center (P) at Finschhafen on 2 September 1944 to train signal replacements and fillers for new organizations.[26]

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General Kenney desired that as much of the combat crew training as possible be accomplished in the U.S., preferably at training centers staffed by veterans of SWPA.[27] Such centers were established in the Third and Fourth Air Forces during the fall of 1944, and by February 1945 Kenney professed satisfaction with the quality of their products.[28] During 1944, however, FEAF received heavy bomber crews which lacked training in formation flying, evasive action over a target, and identification of objectives from aerial photographs. The necessity for the FEAF Combat Replacement Training Center (established at Nadzab shortly after its activation on 15 June 1944*) to teach basic skills reduced the time allotted for its own specialized program of instruction: SWPA air warfare. At times irregularity in monthly arrivals from the U.S. and the urgent needs of combat units caused a sharp curtailment of the scheduled five-week B-24 course and the four-week B-25, A-20, and fighter courses.[29]

The indoctrination program of the CRTC was nonetheless soundly conceived as an introduction to SWPA. Under the command of Col. Carl A. Brandt until 26 January 1945 and thereafter of Col. John P. Henebry, both experienced combat commanders, the CRTC gave both ground and flight training. Ground instruction was broken down into loran, radar, gunnery, link, bombing, communications, intelligence, jungle, medical, and weather schools. Flying training was divided into bomber, fighter, and troop carrier classifications, each under an experienced officer. The fighter unit taught SWPA combat formations, techniques of dive bombing and strafing, and tactics of proved worth against Japanese aircraft. Bomber crews received transition, formation, instrument, and bombing instruction. During the training period, crews were taken on missions against Wewak as a jungle target, to Rabaul for experience with hostile antiaircraft fire and study of a town and airfield complex, and, after April 1945, on a long-range mission against Vogelkop targets. These missions not only gave the crews an introduction to combat but kept bypassed Japanese forces under constant aerial attack. After a few orientation flights, transport crews were broken in by ferrying replacement pilots to their assigned units in the forward areas.[30]

In preparation for airborne operations in the Philippines, the 54th Troop Carrier Wing conducted joint training with elements of the 11th Airborne Division between August and November 1944. Because

* It moved to Clark Field on 17 July 1945.

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of the heavy demands on transport resources in building up Allied strength in Netherlands New Guinea, the wing could spare only one squadron at a time, but the units were dispatched in turn to Doboduru, where they received refresher training in paradrops and aerial supply. All phases of glider operations were stressed, including loading, rapid take-offs, assembly, multiple simultaneous release, and unloading.[31] While the large-scale employment of airborne troops planned for the Philippines campaign was not affected, the training proved of value at Tagaytay Ridge, on Corregidor, and in the Cagayan valley.

Planes and Weapons

In anticipation of the Philippines campaign, FEAF undertook to replace many of its obsolete and obsolescent planes. By April 1944 the P-39's of the 82d and 110th Reconnaissance Squadrons were approaching 400 hours' flying time and these long-obsolete Airacobras were about worn out. The two units had been so invaluable in close support work that Whitehead asked that they be re-equipped with P-51D's, but since the P-51 was the favored plane for long-range escort in ETO* there were as yet none available for SWPA.[32] Two months later, Whitehead reminded Kenney that the 7th and 8th Fighter Squadrons needed re-equipping: their P-40's were about "on their last legs." Kenney, who called the plane "the spearhead of the air advance,"[33] made an unsuccessful effort to obtain more. Since the squadrons must have some replacements by July, Whitehead then suggested P-38's to make the 49th Group an all-P-38 organization.[34] FEAF finally worked out a satisfactory plan when General Giles visited the theater in August to discuss materiel problems.† FEAF was assigned enough P-38's during September and October to equip the 7th and 8th Fighter Squadrons, permitting Whitehead to transfer their P-40's to the 82d and 110th Reconnaissance Squadrons pending such time as the reconnaissance version of the P-51 (F-6D) began to flow to the theater. The 82d Squadron at Morotai received the first of the F-6D's during November and became the original Mustang unit in SWPA. The 110th, its P-40's busy at Leyte and Mindoro in the meantime, received its F-6D's in February 1945.[35]

Early in 1945 two Fifth Air Force fighter groups were re-equipped with P-51's. The 348th Group, squadron by squadron, began exchang-

* See Vol. III, 11–12, 49, 113.
† See above, p. 284.

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ing its P-47's for the Mustangs, completing the conversion late in March. Beginning in January, the plan had been to permit each squadron twenty to thirty days' training with the new plane, but operational commitments cut the training period to approximately a week for each squadron. The 35th Group received its first P-51's early in March, and all three squadrons had checked out by the end of the month. Many pilots were reluctant to part with the "Jug," as the P-47 was affectionately called and which Whitehead thought "the best fighter which our country possesses," but its weight required long runways and he feared that it would always be late getting forward. The P-47 nevertheless remained operational in SWPA: the Mexican 201st Fighter Squadron, so equipped, reached Clark Field on 5 April and was attached to the 58th Fighter Group, which kept its P-47's until the end of the war. The two units gave valuable support to the ground troops on Luzon.[36]

Suitable conversions were not possible for FEAF's medium and light bombers. By actual age and combat hours, the B-25's were the oldest tactical aircraft in the SWPA. Prior to September 1944, the 405th Squadron had received no new B-25's in over 13 months, and 1 of its planes had over 160 combat missions.[37] The A-20 status was less critical and V Bomber Command was well pleased with the new A-20H's which arrived in September.[38] Kenney would have been willing to fight the war to an end with B-25's and A-20's because he thought them able to oppose any plane the Japanese could produce, but manufacture of both was scheduled to end in 1944.[39] In their place the AAF intended to use the new A-26 Invader, a Douglas plane similar to but larger than the A-20. It was fast (325 m.p.h. at sea level), was armed with 14 forward-firing machine guns, and could carry 2 tons of bombs for a maximum combat radius of 635 miles.[40] But when four new A-26's were test-flown by the 3d Bombardment Group during July 1944, the pilots reported that the long, broad nose and engines forward of the cockpit reduced visibility so severely that employment of the plane at low levels was impracticable in a theater where jungles and enemy camouflage demanded the best possible view.[41] So informed, Kenney flatly told a production representative that he did "not want the A-26 under any circumstances as a replacement for anything";[42] he wrote Arnold that the AAF would do well to admit a mistake and stop producing the "hopeless" A-26's.[43] While Giles was in SWPA, Kenney asked for enough B-25J's to re-equip the

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three Fifth Air Force A-20 groups, a request which the AAF was unable to meet as long as the war continued in Europe, but it did increase the flow rate of these planes to FEAF. The A-20's released by conversion to A-26's in ETO permitted FEAF enough A-20 groups to maintain their strength until July 1945, when Kenney was satisfied with a modified A-26 as replacement.[44] The 3d Bombardment Group began conversion to A-26's in June, but it had not completed the work before the close of the war.[45]

If Kenney had objected to experimentation with the A-26 so late in the war, he nevertheless entered into plans for an even more remarkable conversion while in Washington in March 1945—substitution of very heavy B-32's for the attack bombers of the 312th Group. The B-32 Dominator had been Consolidated Aircraft's answer to an invitation to construct a very heavy bomber,* but unlike its counterpart, the B-29, the Dominator had not reached mass production. In specification it was, generally speaking, a super-Liberator which could, under optimum conditions, carry a 10-ton bomb load against a target 1,250 miles away. Reversible-pitch propellers, which could be used to decrease the landing roll, and the Davis wing permitted the plane to operate from SWPA heavy bomber fields. Tests of the B-32 had begun in the fall of 1944, but by early 1945 there was a divergence of opinion among AAF agencies as to whether the plane should be purchased in any great numbers. Anxious to secure the range and bomb capacity of the bomber, Kenney persuaded Arnold to give him the B-32's, which no one else seemed to want, and to test them in combat. Special crews took three of the planes to Clark Field in mid-May, and after a month of minor shakedown flights, the testing period was completed on 17 June; the test crews were pessimistic regarding technical defects of the B-32's.[46] Whitehead, however, thought the B-32 "a fine weapon for our job at Okinawa," and recommended that the 312th Group be organized as a four-squadron B-32 group.[47] Only the 386th Squadron managed conversion before the end of the war, and only fifteen of its B-32's actually saw service against the enemy.[48]

Although its men flew extensively over water, FEAF until autumn 1944 remained short of OA-10's, the AAF version of the Catalina amphibian rescue ship. Earlier, FEAF had depended heavily upon Navy Catalinas and surface craft for rescue of its downed airmen, but it got its own air-sea rescue organization with the arrival of the 2d and

* See above, p. 6.

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3d Emergency Rescue (ER) Squadrons from the U.S. in July and September. They were assigned to the Thirteenth and Fifth Air Forces respectively, which established for the direction of their operations the 5230th and the 5276th Rescue Composite Groups, each a provisional organization functioning directly under air force headquarters. Upon Kenney's urging, the AAF finally permitted the activation of the 5th ER Group and the 13th ER Group in late March 1945. Perfection of a control mechanism which resulted in the rescue of 551 Allied airmen between July 1944 and February 1945, however, did nothing to alleviate a shortage of basic aircraft. In early December 1944 General Streett notified Kenney that only five of twelve OA-10's assigned to his 2d ER Squadron were in the hands of the unit and two of them were undergoing engine change. Kenney immediately asked Washington for assignment of 100 per cent reserve aircraft and, pending this, for dispatch of enough OA-10's and crews to bring FEAF's two squadrons (which had on hand twenty-two planes) up to their authorized strength of forty-eight planes plus a 25 per cent reserve. But new OA-10's came in slowly. The heaviest augmentation of strength came in April 1945, when the 6th ER Squadron arrived from the U.S. for assignment to the 5th ER Group. Meanwhile, the emergency rescue groups functioned brilliantly with their OA-10's, a few new "Flying Dutchmen" B-17's, and such Catalinas as could be borrowed from the Seventh Fleet.[49]

Since extensive airborne operations were planned for the Philippines, especially for the invasion of Mindanao, FEAF estimated its requirements at 650 C-47's and 735 gliders, mostly CG-4A's. It actually had at the end of May 1944 only 511 C-47's and no gliders, which until that time had not been required. Many of the planes were getting old; one assigned to the 54th Troop Carrier Wing—called "Old Number Two"—reputedly was the tenth C-47 purchased by the AAF and had flown more than 2,000 missions.[50] The AAF agreed to meet the over-all glider requirement and promised 12 C-47's, equipped to pick up gliders, during June and July 1944; for the rest, it would be necessary to rely on the prospect that the Air Transport Command would be operating 100 C-47's in SWPA's rear areas by August and the promise that, beginning in October and continuing through January, enough of the new C-46's would be sent out to re-equip 2 groups with this larger-capacity cargo plane. The C-46's actually began to reach SWPA during September 1944, and in the

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following month the 433d Troop Carrier Group started conversion. By July 1945 two other troop carrier groups had been provided with C-46's.[51] The decision to bypass Mindanao* had resulted in a curtailment of airborne operations, with the result that now there were no serious shortages.

In fact, not all of the resources made available to FEAF for airborne operations would be required. During the summer of 1944 the AAF was organizing, on the basis of experience gained in Burma,† two air commando groups and two combat cargo groups, to which were to be added engineer companies, airdrome squadrons, service groups, an aerial resupply depot, and an air depot group. These units were intended for CBI, but Giles on 18 June wrote Kenney of Arnold's fear that circumstances there would "deny them the bold and imaginative employment required" and invited Kenney to submit a competitive plan.[52] Kenney characteristically replied, with no loss of time, that this was "right down our alley." He was eager to get the P-51's as replacement for his P-40's and recommended only the substitution of additional service groups in place of the air depot group, a change which would assure greater mobility. Kenney, who long had depended upon waterborne supplies, responded enthusiastically to the central idea of the commando group, which was a self-sufficient organization, logistically and otherwise. "Boats are all right in their place," he concluded, "but the Navy fights a different war and the Air Force here would like nothing better than to rely solely on air transportation."[53]

While in the theater during August 1944, both Giles and Hull recommended that all of these groups intended for CBI be assigned to FEAF, but the JCS were unwilling to make a definite decision until OCTAGON. There, in view of the decision to bypass Mindanao, they decided to divide the groups between SWPA and the CBI; a promise that all possible steps would be taken to meet SWPA's remaining requirements for transports and P-51's was added.[54] The 3d Air Commando Group, including its ten subordinate units, arrived at Leyte on 1 December and was immediately assigned to V Fighter Command. Though its P-51's did not arrive until 7 January 1945, it began combat flights next day. A few C-46's and crews of the 2d Combat Cargo Group had arrived during November, but the ground echelons did not reach Biak until the next month. Even then, initiation

* See above, p. 307 and below, pp. 341–42.
† See above, pp. 208 *n*, 284.

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of full-scale operations was hindered by a lack of spare parts, engines, and full organizational equipment. The group was assigned to the 54th Troop Carrier Wing, except for one C-46 squadron which was detailed temporarily to the new 5298th Troop Carrier Wing (P) for rear area operations. The 10 glider sections of 340 officers and 490 enlisted men requested for airborne operations in the Philippines arrived at Biak during November, where, organized into the 1st Glider Group (P), they were assigned to the 54th Troop Carrier Wing to await employment. Most of the men and their gliders would be transferred back to the U.S. in the summer of 1945 without having seen any combat.[55]

Throughout 1944–45 FEAF continued its experiments on extension of the range and augmentation of the firepower of all aircraft received from the U.S. There was now little left to be done to the B-24, frequently modified during 1943, except that FEAF still had to remove all belly turrets from Liberators allocated to V Bomber Command and install them in those destined for the XIII Bomber Command. The former command, usually flying fighter-escorted missions when in critical areas, preferred the lighter weight of manually operated guns; the latter needed the belly turret in its long-range and often unescorted missions. Similarly, the V Bomber Command preferred extra ammunition to protective armor.[56] The B-25G, arriving first in late 1943, had had a heavy 75-mm. cannon in its nose; since targets for this awkward piece of ordnance were limited, the weapon was removed and two fixed .50-caliber guns were placed in the cannon hatch. The addition of package guns further increased strafing power, but blast effects caused skin failures and the modification was never satisfactory. B-25H's came in February 1944 with an improved light 75-mm. cannon, four forward-firing guns in the nose, two package guns on either side of the fuselage, a top turret, a ball turret in the tail, and a flexible gun in each waist window. Pilots still found it impossible to fire more than four rounds from the cannon in one pass over a target, and aiming difficulties made the plane extremely vulnerable to ground fire. This model was first assigned to the 498th Squadron, and then abandoned in August 1944. Later in the spring of 1944, the first B-25J's reached SWPA, a type similar in armament to the B-25H but with a plexiglas bombardier nose mustering one flexible and two fixed .50-caliber guns. This model was completely unsuited for a theater where medium bombers attacked at low altitude, and

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FEAF had to replace the bombardier nose with eight .50-caliber fixed-gun nose kits dispatched for the purpose by the AAF. Beginning in September 1944 B-25J's with 8-gun nose strafers arrived and proved suitable for use without armament changes, but FEAF added an additional 150-gallon fuel cell in the radio compartment to augment this range.[57]

Except for their lack of range, A-20's continued to give little trouble. FEAF tried installation of bomb-bay tanks in the A-20 models in use during the spring of 1944, but this was hardly under way before A-20G's appeared with built-in bomb-bay tanks. In October 1944 the A-20H's included improved bomb-bay tanks and six .50-caliber forward firing guns; they were also capable of slightly increased speeds and greater maneuverability than earlier models. Early in 1945 special wing racks for droppable fuel tanks were added on A-20's, permitting some extension of range and allowing them to carry napalm. During July 1944 the 312th Group, while at Hollandia, also initiated tactical experiments with the A-20 as a rocket-carrying plane, but the rocket-launcher tubes reduced cruising speed from 200 to 185 m.p.h. and thereby reduced range. Since neither Kenney nor Whitehead approved such a sacrifice, further procurement of the weapon was halted. Late in the war both men favored the new Zero-rail-type rockets which did not need cumbersome launching tubes, but this equipment was mounted on fighters and on the new A-26's instead of the old A-20's.[58]

Fighter modification was chiefly concerned with the extension of range. The combat radius of the P-38J's had been stretched with internal and external wing tanks prior to Hollandia, and cruise-control techniques added further miles to the planes; by the fall of 1944 they carried their maximum fuel load. The P-47's presented more difficult problems. As first delivered to Port Moresby, these planes had slightly less range than a P-40. To increase the P-47's combat radius to 625 miles, the V Air Force Service Command had designed a 220-gallon belly tank for production in Australia, and, prodded by experience in ETO, the AAF had added 65 gallons to the internal supply and two 150-gallon jettisonable fuel tanks. Meanwhile, FEASC experimented with a 42-gallon fuel cell mounted in the fuselage directly behind the pilot and with a form-fitting belly tank holding about 70 gallons of fuel. By the summer of 1944 all of these expedients were in use, but V Fighter Command pilots, having seen numerous crashes attributable to tire failure on such heavily loaded planes, were unwilling to carry

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more than 505 gallons of fuel. Kenney, realizing that the P-47 had reached its load limit without impractical heavier-ply tires, canceled both the fuel cell and the form-fitting belly, or "scab," tank. Cruise control, however, increased P-47 range during the fall of 1944. By the spring of 1945 it was being replaced with the P-51, the AAF's ace long-range fighter.[59]

While the need for extreme fighter ranges decreased once FEAF units moved into the Philippines, the jettisonable fuel tanks proved excellent for carrying the new incendiary mixture called napalm. This powder, a metallic salt of the naphtha used in soap manufacture mixed with gasoline to form a gelatinous mass, was dropped in a belly tank and fired with a set igniter. The gel clung to any surface and burned with an extremely hot flame. The 12th Fighter Squadron (XIII Fighter Command) flew the first tactical napalm mission in the SWPA on 22 October 1944, dropping 75-gallon belly tanks on Boela oil storage tanks. Although napalm appeared to be an admirable attacking weapon, Whitehead permitted only one tactical demonstration on Leyte, insisting that large stocks be accumulated for massed attacks in support of ground fighting on Luzon. While other planes would attempt napalm missions (a C-47 dropped drums of the mixture on Manila Bay islands), the incendiary remained best suited as a weapon for fighters.[60]

By the fall of 1944 FEAF had secured the planes and attacking power necessary to initiate a hard-fought campaign in the Philippines, the greatest offensive effort of the SWPA. On 31 August 1944 FEAF had assigned 2,629 first-line combat aircraft—491 B-24's, 509 B-25's, 350 A-20's, 497 P-38's, 135 P-40's, 429 P-47's, 42 night fighters, and 176 reconnaissance types. Of noncombat planes, FEAF had assigned 633 transports, mostly C-47's, and 164 communications planes, including liaison and rescue types.[61] Once the campaigns for Leyte and Mindoro got under way, however, fierce Japanese resistance coupled with improvised and crowded airstrips brought high operational losses. By the end of December FEAF's first-line strength was down to 403 B-24's, 302 B-25's, and 270 A-20's. The number of P-38's declined to 398 at the end of November but rose to 470 in December. The P-47's, which were being replaced with P-51's at the end of December, numbered 257 while only 95 P-51's were assigned. All figures, moreover, counted planes on the way from the U.S. as well as those actually in the theater.[62]

FEAF was "running a little close to the danger line" at the same

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time that Arnold warned of insufficient American production to care for increased attrition in all of the combat theaters. In a letter to Arnold on 28 December, Kenney expressed concern about his lack of single-engine fighters: the AAF had cut back P-47 deliveries and P-51 substitutes were not arriving in sufficient numbers to replace losses and fill reconversion needs. Without emergency allotments FEAF would be short 275 single-engine fighters by mid-February. Kenney could see no chance for improvement of his B-24 shortage (forty-seven on 31 December) from scheduled replacements; P-38 squadrons had to operate at three-quarter strength until replacements caught up in February.[63] The AAF promised some relief for the B-24 shortage and forecast that P-51 units would be fully equipped by late February, P-38 groups by late March.[64] On 1 February, however, General Giles warned that theater attrition was "becoming more acute every day," and warned that conservation policies must be far more stringent.[65] A shortage of shipping space out of San Francisco further jeopardized movement of such aircraft as were allotted to FEAF. Fighters and light bombers were generally deck-loaded on tankers there, but during February the Pacific Overseas Air Technical Service Command managed delivery of only 239 planes (119 of them on a carrier dispatched as an emergency).[66] With 503 FEAF planes on the docks at the end of February, the POATSC asked permission to receive no more until the backlog could be worked off.[67]

Fortunately, the threatened reduction of air strength was curtailed before it became critical. General Kenney requested and received some forty-seven late-model P-38J's and L's released by the Seventh Air Force in its conversion to P-51's.[68] The AAF shipped P-38 models without tail warning devices, thereby speeding delivery by 20 days;[69] it also scheduled 200 fighters over and above FEAF's normal allocation to give a margin of reserve for unanticipated losses.[70] During January, moreover, the FEASC reclaimed 17 P-47's and 20 B-24's from second-line status, a major undertaking since the command estimated that renovation of a P-47 and a B-24 required an average of 4,000 and 8,750 man-hours of labor, respectively.[71] When P-51's remained in short supply, Kenney, in Washington during March 1945, agreed to retain the 58th Fighter Group as a Thunderbolt organization, at least until he could test combat suitability of new P-47N's offered him as replacements.[72] After February waterborne movement of planes to FEAF improved: total deliveries of new air-

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craft, including B-24's, B-25's, and transports which could be flown overseas, increased from 430 in February to 459 in March, 506 in April, and 713 in May.[73] Losses in FEAF's tactical units declined during these same four months, and beginning in May the number of aircraft in combat units began to jump upward strongly. What had threatened to become a crisis had been checked, but the flood of new airplanes—the 713 received during May was an all-time high—placed a severe burden upon FEASC erection and modification depots.[74]

Established on 15 June 1944 at the reorganization resulting in the formation of FEAF, the Far East Air Service Command had assumed direction of aircraft erection and modification, fourth echelon maintenance, and supply common to the Fifth and Thirteenth Air Forces. It continued as a provisional organization until 18 August and for its first several months remained chiefly an administrative redesignation of the logistical organization which had grown up during two years of combat. After two years of effort, Kenney finally secured Maj. Gen. Clements McMullen, an officer whom he described as "tops in the supply and maintenance field and a personal friend of twenty-five years' standing," and made him commander of FEASC on 24 October. McMullen had long experience in the AAF Air Service Command, which he had commanded for a short time during 1944 prior to its merger into the Air Technical Service Command.[75]

Within two months McMullen determined that no "completely cohesive Headquarters FEASC entity" had never existed. Personnel were poorly utilized throughout the command, which had been in continuous competition with FEAF and the Fifth Air Force for control of its own materiel agencies. Intent on providing for anticipated emergencies, commanders had "permitted pilfering which in some cases degenerated down to plain stealing." On 23 December McMullen accordingly asked Kenney to begin transfers of competent, combat-experienced flying officers to FEASC, to limit tactical units to a strict ten-day supply on hand, to assign the 54th Troop Carrier Wing and the 5298th Troop Carrier Wing (P) to FEASC, and to give FEASC control of all rear-area bases not occupied by tactical units.[76] McMullen also believed that FEASC's mission required it to control all ocean-going shipping allocated to the air forces by the Services of Supply.[77]

At FEAF McMullen's recommendations met the conservative reaction of men who had long subordinated administrative efficiency to success in combat;[78] nevertheless, General Kenney instituted reme-

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dial action to secure combat personnel for FEASC and agreed that existing conservation policies must be tightened. But he was unwilling to limit combat organizations rigidly even to the fifteen-day supply level supposedly in practice. The 5298th Troop Carrier Wing (P),* having been disbanded and reactivated as the 322d Troop Carrier Wing on 30 December, was assigned to FEASC by Kenney on 3 January 1945. Although FEASC's wing controlled little more than the 374th Troop Carrier Group and despite the fact that the 54th Troop Carrier Wing remained under Fifth Air Force command, Kenney considered that his action met McMullen's demand for air transport.[79] Although the Fifth Air Force protested that it had little faith in FEASC's promises of orderly resupply, supply levels for combat units and their associated service units were set at a thirty-day level.[80] The FEAF A-4 continued to manage allocation of shipping despite reminders that FEASC could better assume the duty.[81]

Though given only a part of his desired reforms, General McMullen reorganized his own establishment for more efficient operations. Headquarters, FEASC, was organized into six functional divisions on 13 January 1945. The management control division, a consolidation of the existing scattered accounting and fact-finding offices, had as one of its most important functions maintenance of an effective stock-balance report of all units of FEAF. In order to keep better accounts, McMullen had already stopped the two air service area commands from requisitioning directly from the U.S. The new organization conformed closely to that of the AAF's Air Technical Service Command and facilitated dealings between the two. McMullen also ordered an active interchange of officers between FEASC and the ATSC. He dispatched classification inspectors to the operating units of his command in order to bring personnel accounting up to date.[82] The new efficiency in FEASC contributed to the success of the Philippines campaign, and would have been of greatly increased significance had redeployment from Europe required FEASC to take command of a vastly expanded logistical establishment.

* The 5298th Troop Carrier Wing had been activated with American units released from the Directorate of Air Transport, AAFSWPA, at the dissolution of the latter unit on 3 Oct. 1944.

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CHAPTER 12

* * * * * * * * * * *

LEYTE

HALSEY'S decision to move his Third Fleet carriers northward on 12 September had been a bold one,* for he was undertaking a sustained attack on Japanese air units based on many fields—an operation considered extremely hazardous in naval circles. Nevertheless, Task Force 38 had encountered next to no resistance over Mindanao, and Halsey had moved on the Visayas, steaming so far west that Samar loomed on the horizon. Here he launched his carrier planes for two days of aerial activity against resistance so light he described it as "amazing and fantastic": while his fighters destroyed plane after plane on the ground, the Japanese refused to come up and fight. On 13 September a carrier pilot rescued from Leyte reported that according to guerrillas, there were no Japanese on Leyte; although seventeen airfields had been reported by intelligence, sightings showed only six enemy airfields on Leyte and none on Samar. After a staff conference aboard his flagship, Halsey made the astounding request that he be allowed to bypass the Palaus and land the ground troops so released on Leyte. This invasion, to be commanded by MacArthur, was to be covered by carriers until land-based aircraft could be installed.[1]

Nimitz immediately directed Halsey to continue with the first phase of STALEMATE II and so much of the second phase as was required to capture Ulithi Atoll, but he informed SWPA that the troops loaded for the capture of Yap (XXIV Corps including the 7th, 77th, and 96th Infantry Divisions) could be made available for an early offensive against Leyte.[2] The JCS, meeting at Quebec with the British chiefs, radioed SWPA that such a maneuver would be highly desirable.[3] Encountering nothing to change his opinion, Halsey informed

* See above, pp. 306–7.

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SWPA and POA on 23 September that the Japanese air force in the Philippines was "a hollow shell operating on a shoe string."[4]

When these messages reached SWPA's Hollandia headquarters, MacArthur was off Morotai with his invasion forces, necessarily preserving radio silence.* Sutherland, however, immediately informed the JCS that SWPA recognized the advantage of an attack on Leyte, although its own sources indicated Japanese strength to be greater than Halsey believed.[5] After receiving additional reports of continued Third Fleet successes, Sutherland, late on the evening of 14 September, notified the JCS that SWPA was prepared to move to Leyte without preliminary operations on 20 October.[6] Two hours later the JCS approved the operation and directed MacArthur and Nimitz to prepare their plans. On the same day, SWPA flashed warning orders to its subordinates canceling the Talauds and Mindanao operations and setting the Leyte landing for 20 October.[7] Within another week, GHQ had adjusted its plans for subsequent operations to include a landing on southwest Mindoro (5 December) for the purpose of establishing an advanced air base to cover a move into Luzon at Lingayen Gulf on 20 December.†

The change in strategy occasioned no particular shock within SWPA. In June 1944 Whitehead had proposed that after Biak the Allies invade Davao with cover provided by the Pacific Fleet, preferably sometime in October. Kenney had discussed the proposal with MacArthur and Sutherland, and while they thought it "not only good but very sound," they did not believe the Pacific Fleet could be made available before 15 November, the Philippine invasion date set by the JCS.[8] Accordingly, SWPA had projected the capture of the Talaud Islands on 15 October, of Sarangani Bay on 15 November, an airborne invasion of Misamis Occidental on 7 December, and the invasion of Leyte on 20 December. Warning instructions had been issued for these operations on 31 August, but there were objections to each of them: the Talauds were to be taken prior to completion of adequate air facilities at Morotai; the attack on Sarangani Bay would

* Capt. Walter Karig *et al.*, in *Battle Report, The End of an Empire*, p. 304, state that "on September 13 after viewing the easy occupation of Morotai," MacArthur ordered the commander of the *Nashville* to break silence and radio his acceptance of the proposals. Radiogram headings and Kenney's contemporary letters, however, indicate that General Sutherland originated the accepting message at Hollandia. See also George C. Kenney, *General Kenney Reports* (New York, 1949), p. 432.

† See below, p. 391.

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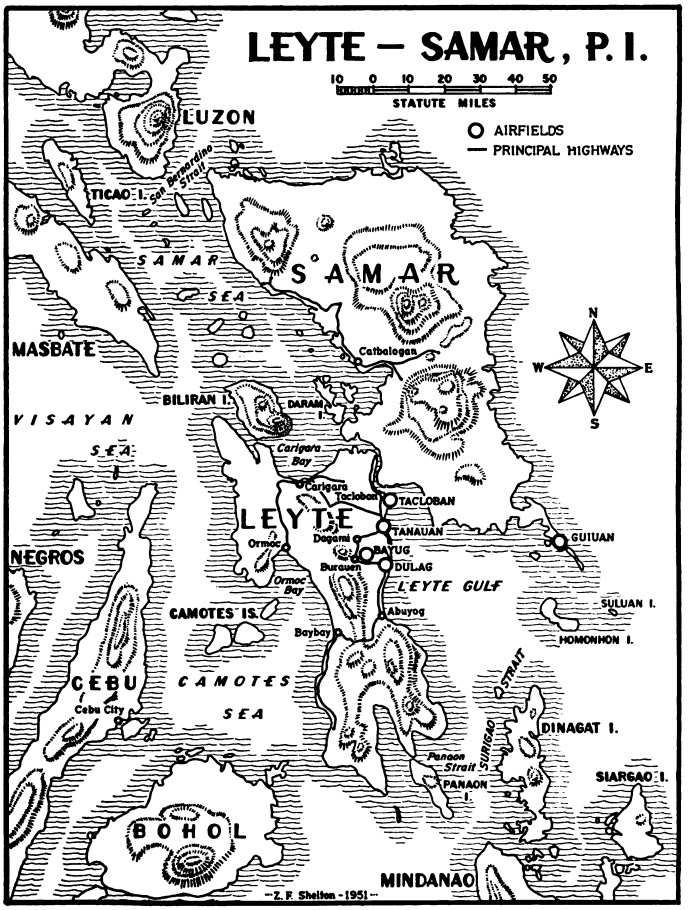
have forced the Seventh Fleet to steam up a long, narrow channel where its ships would be admirable targets for hostile artillery; the subsequent airborne operation would hinder other operations by allocating air facilities on Morotai and the Talauds almost exclusively to troop carriers; this airborne operation, moreover, depended upon two



air commando groups and two combat cargo groups from the U.S., groups whose assignment was "still under study" on 22 August.[9]

Though Kenney earlier had criticized MacArthur's RENO V plan on the ground that it placed too much faith in the ability of carrier aviation to support an invasion beachhead against determined enemy opposition,[10] he had become convinced by mid-September that the Japanese air forces were in a state of utter demoralization: as he inter-

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preted the situation to Arnold, the Japanese had lost their competent pilots and maintenance men at Wewak, Manus, Kavieng, and Rabaul. Japanese sea power was so badly depleted that it was no match for any one of several Allied task forces. Indeed, he believed the war might well end following an Allied victory in the Philippines, for the Japanese "industrial barons" would see that the war was lost and force the Emperor to sue for peace. At the very latest, the "official war" should be over by mid-summer of 1945.[11] After the decision to advance the Leyte operation Kenney wrote Whitehead in the same vein:

> If my hunch is right that the Japs are about through we are all right. Navy air will take care of the preliminary softening up process and support the troops ashore long enough for us to get some airdromes for our land-based aviation. If the Jap . . . intends to fight—and particularly if he can get some decent air support for his ground troops, we are in for a lot of trouble. I believe however that the gamble is worth while.[12]

After reading Kenney's opinions, Arnold thought it well to warn that "jiu jitsu, the Japs' natural fighting expression, has always been to strike, recoil, absorb what punishment may be necessary—but—to have in his power the one lethal blow that will win the fight."[13]

Japanese and Allied Plans

Arnold's warning was justified, for Japanese strength in the Philippines was much more formidable than it had appeared to Halsey. The enemy had been anxious about an attack on the Philippines since the Allied capture of the Admiralties early in 1944; MacArthur's statement that he would return had left little doubt in the minds of army planners at Tokyo that the islands would be invaded. Accordingly, they began to build up their supplies and garrison. In supreme command was Field Marshal Hisaichi Terauchi, CINC of the Southern Area Army, who had moved his headquarters from Singapore to Manila in April 1944. Though Terauchi seems properly to have been judged by the Allies to be one of the least able of Japanese generals, his subordinates were men of a different stripe. Lt. Gen. Shigenori Kuroda had commanded the Fourteenth Area Army until 5 October 1944, when he was relieved by Gen. Tomoyuki Yamashita, the "Tiger of Malaya" and one of Japan's ablest commanders. Yamashita had led the Japanese forces to victory at Singapore in early 1942 only to be reassigned (probably because of Premier Tojo's jealousy) to the quiet Manchurian front. Commander of the Fourth Air Army was Lt. Gen.

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Kyoji Tominga, an officer who had held important positions in the Imperial War Ministry and who had replaced Lt. Gen. Kumaichi Teramoto in August 1944. Headquarters of the Fourteenth Area Army and Fourth Air Army were in Manila, but each organization was independently responsible to Terauchi.[14]

When Yamashita assumed command of the Japanese ground forces in the Philippines, he found most of the planning already accomplished. Aided by an unusually accurate estimate of Allied intentions prepared by the Army Section, Imperial GHQ, on 20 September, the Japanese visualized a two-pronged attack on Luzon by MacArthur from the south and by Nimitz from the Pacific. MacArthur would take footholds in the Davao and Sarangani areas, advance to Zamboanga or to Leyte-Samar, and there prepare for an attack against Luzon. Nimitz would employ the Third Fleet to support MacArthur and might attempt a landing with his own forces either on the Bicol Peninsula or in the Aparri area of Luzon. The initial attack was logistically feasible in late October; a probable desire to announce the invasion before the U.S. election on 7 November further argued for that time. The only point of real uncertainty was where the American landing would come first. Allied seizure of Morotai indicated southern Mindanao, but the Palaus would permit a landing directly upon Leyte. The Terauchi-Kuroda plan of defense accordingly called for fifteen divisions: five on Luzon, five in the southern Philippines, and five to be deployed from China, Korea, and Formosa after the Allied landing. Yamashita immediately saw that he would need at least 200,000 tons of shipping to effect such a plan, much more than was available: as late as 23 October he attempted to convince Terauchi that they should instruct the troops on Leyte and Mindanao to fight a delaying action while preparations were made for the major battle on Luzon. Terauchi, pointing out that the Japanese Navy had begun to move toward a major engagement at Leyte, refused to modify the plan.[15]

Japanese ground dispositions on 20 October 1944 were therefore designed to hold all objectives until reinforcements could arrive. In the Visayas, the enemy had the veteran 16th Division on Leyte, while the newly activated 102d Division held Panay, Cebu, Bohol, and Negros. Japanese strength in Leyte proper on D-day was later established by the Sixth Army at 19,350 troops of all types.[16] Close by Leyte in northern Mindanao was the 30th Division, while the 100th Division garrisoned southern Mindanao; there were two other inde-

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pendent mixed brigades in the area, one at Zamboanga and the other at Jolo. These forces were under the immediate command of Lt. Gen. Nunesaku Suzuki of the Thirty-fifth Army with headquarters on Cebu. On Luzon were three infantry divisions, one armored division, and two independent mixed brigades. Suzuki had supervised the preparation of strong beach fortifications at Leyte, but in the early part of July Kuroda, after studying the effectiveness of U.S. naval bombardment at Saipan, announced that the old tactic of attempting to annihilate the enemy on the beachhead would be abandoned. Since neither Suzuki nor his subordinates approved this change, it was agreed, in a conference held at Cebu in August, to sacrifice a part of the defending forces in a holding action on the beaches and then to concentrate inland for the decisive battle.[17]

The strength and disposition of the Fourth Air Army are more difficult to determine because of the disorganization caused by American carrier attacks in September and the confusing picture resulting from hurried reinforcements. The air army had three divisions: the 4th at Manila, the 2d at Bacolod on Negros Island, and the 7th in the Celebes-Borneo area. Just prior to the Philippines campaign the main fighter force of the air army was deployed at Manila and Clark Field and at the fields on Negros, while the bombers were at Lipa and Manila (Luzon), Kudat (North Borneo), Puerto Princesa (Palawan), Shanghai, and on Formosa. According to postwar recollections, army air strength in early September 1944 was approximately 300 planes, of which 200 were operational. About 200 planes were lost to the September carrier strikes, but by 10 October reinforcements had brought total strength up to 400 planes, with about 200 operational. Naval land-based aircraft in the Philippines were entirely independent of the army command and responsible to CINC Combined Fleet: in September naval air units were stationed at Davao, Zamboanga, Tacloban, and Manila. Since the First Air Fleet, which controlled these units, had suffered heavy losses to the September carrier strikes, the Japanese early in October started moving their Second Air Fleet to the Philippines, where, after the American carriers had struck again, the two air fleets were consolidated as the First Combined Base Air Force about 26 October. This consolidation could muster about 400 planes, some two-thirds of which were operational. The army and navy air units usually occupied different airfields and functioned together only by tenuous liaison. Both services were scraping bottom in

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their reservoir of trained aircrews: in desperation they had just begun to turn to *kamikaze* tactics in which the pilots deliberately sacrificed their lives to destroy Allied targets.[18]

Movement of the Second Air Fleet to the Philippines was coordinated with plans by the Combined Fleet to offer all-out naval resistance to the Allied invasion. As Adm. Soemu Toyoda, CINC of the Combined Fleet, later explained:

> Should we lose in the Philippines operations, even though the fleet should be left, the shipping lane to the south would be completely cut off so that the fleet, if it should come back to Japanese waters, could not obtain its fuel supply. If it should remain in southern waters, it could not receive supplies of ammunition and arms. There was no sense in saving the fleet at the expense of the loss of the Philippines.[19]

Since Allied positions in the Marianas now permitted an attack on the Japanese mainland, the Japanese planners drew up a series of defensive plans for all-out fleet employment. SHO I provided defense of the Philippines; SHO II for Formosa, Nansei Shoto, and south Kyushu; SHO III for Kyushu-Shikoku-Honshu; and SHO IV for Hokkaido. Most of the surface strength had been dispatched to Lingga in the NEI where it was adjacent to fuel, but by 17 October the Japanese carriers, which had moved back to Empire waters to train new pilots after their Marianas losses, were still not completely outfitted. Thus the final plan for implementing SHO I, devised by Admiral Toyoda, had to rely on brilliant improvisation. For cover, Japanese surface units would depend upon shore-based planes in the Philippines; the carriers would move south from home waters principally as a diversion. If these carriers could lure Third Fleet vessels northward and away from Leyte, the Japanese hoped that their heavily armed surface ships (the *Yamato* and *Musashi* each mounted nine 18.1-inch guns, the most powerful main batteries in the world) would be able to break through the remaining Allied forces and destroy the beachhead as reinforced ground troops pressed the invasion forces back to the sea.[20]

On the Allied side, the decision of 15 September to advance the Leyte landing to 20 October left an exceedingly short time for preparation. Available information indicated that Leyte—important as the gateway into the Visayas and thence to other islands of the Philippines—would not be favorable for large-scale battles. Although accessible to the Pacific through Leyte Gulf, the island is set back from the eastern edge of the Philippines. Northeastward, and separated from

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Leyte by the narrow San Juanico Strait, lies the mountainous and relatively undeveloped island of Samar, largest of the Visayan group. South of Leyte across Surigao Strait, one of the two principal entrances into the archipelago from the Pacific side, is Mindanao. West of Leyte are other islands of the Visayas—Panay, Negros, Cebu, and Bohol. FEAF planes, in cooperation with Allied torpedo boats, had been able to prevent movement of any substantial number of Japanese troops from Halmahera across a thirteen-mile channel to Morotai, but whether carrier planes could maintain such a blockade between Leyte and the rest of the Visayas until FEAF planes could get ashore was a matter of conjecture.

Planning was complicated by inexact information on the terrain of Leyte, for the maps of the island prepared during the years of American occupation were deficient, particularly on inland topography. But the chief hazard to Allied success at Leyte would be weather, not terrain. Leyte lies near the track of the Philippine typhoons, and between September and January an average of one severe storm a month can normally be expected. The northeast monsoon, moreover, dominates the weather between November and April, and rainfall is especially heavy. Engineers consistently made gloomy predictions that airfields could not be completed on time; only the concentration of engineering resources at Leyte made possible by the deletion of the Talauds-Mindanao operations served to offset these predictions.[21]

Modifying previous plans, Lt. Gen. Walter Krueger's Sixth Army field order, issued on 23 September and later amended, required a ranger battalion to begin occupation of the islands at the mouth of Leyte Gulf on A minus 3. Maj. Gen. F. C. Sibert's X Corps, composed of the 1st Cavalry and 24th Infantry Divisions, was to land at the north end of Leyte Gulf on A-day, seize Tacloban, the provincial capital, and then move up the valley toward Carigara Bay. Maj. Gen. J. R. Hodge's XXIV Corps, composed of the 7th and 96th Infantry Divisions, was to land in the vicinity of Dulag on A-day, seize the Dulag-Burauen-Dagami-Tanauan area with its airfields, and then, when directed, seize Abuyog, move over the road to Baybay, and finally destroy the enemy forces on Ormoc Bay. One regiment, detached from the 24th Division, was to make landings on A-day to clear the Panaon Strait area at the south end of Leyte. To free the Sixth Army (the Alamo Force designation for the Sixth Army was discontinued

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on 25 September) for its assault, the new Eighth Army under Lt. Gen. Robert L. Eichelberger, was to take control of U.S. ground forces in Morotai, New Guinea, and the Admiralties.[22]

Base development would be the direct responsibility of the new Sixth Army Service Command (ASCOM). This organization had been established in July 1944 to provide logistical support for the Philippines operations, and on 6 September its headquarters were opened at Hollandia by Maj. Gen. Hugh J. Casey, former chief engineer of GHQ, SWPA. ASCOM controlled all engineer and service units not required for close tactical support of combat units, and, upon completion of the combat phase of King II, it was to pass its units to USASOS (the SWPA services of supply command) for manning Base K. By A plus 5 ASCOM was to prepare a field suitable for two fighter groups and a night fighter squadron; three more fighter fields were to be completed before A plus 60. It was expected that the engineers would exploit existing Japanese airstrips, of which there were 6, but plans called for the eventual development of 4 medium bombardment fields, 1 heavy bombardment field, a total of 666 heavy bomber hardstands, and an air depot to begin erection of gliders by A plus 30 and of fighters by A plus 60.[23]

Organization of the naval forces revealed the same anomalous division of control which had been used at Hollandia and Morotai. The Allied Naval Forces, organized as the Seventh Fleet under Kinkaid, would be directly under MacArthur. Its Central Philippine Attack Force (Task Force 77), commanded by Kinkaid, incorporated the close cover, bombardment, escort carrier, minesweeping, beach demolition, and service groups of the Seventh Fleet. Six old battleships, six cruisers, and their escorts were borrowed from CENPAC to augment Seventh Fleet bombardment power, as were eighteen escort carriers to provide cover for the convoys and beachheads until FEAF planes could base on Leyte. The Northern Attack Force (TF 78), under Rear Adm. Daniel E. Barbey, was to transport and land X Corps, and the Southern Attack Force (TF 79), under Vice Adm. Theodore S. Wilkinson, was to transport and land XXIV Corps.[24]

The fast carriers and battleships of the Pacific Fleet, organized as the Third Fleet, would remain under the operational control of Nimitz and the immediate command of Halsey. Following a three-day conference at Hollandia, Rear Adm. Forrest P. Sherman, for CINCPOA,

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and Maj. Gen. S. J. Chamberlin, for CINCSWPA, issued a plan of Third Fleet support on 21 September,* which was further elaborated in Halsey's operations order. Shore-based aviation from the Marianas would conduct maximum offensive strikes against the Volcano and Bonin islands on 8–10 October. In the main effort, the fast carriers of Vice Adm. Marc A. Mitscher's Task Force 38 would launch strikes against Okinawa commencing at dawn on 10 October, proceed southward and feint at northern Luzon with an afternoon fighter sweep on 11 October, and conduct sustained strikes against Formosa on 12–13 October. Following these strikes by all four fast carrier groups, three groups would attack Luzon on 16–17 October and then, fueling in rotation, move southward attacking Samar and the Visayas until on 20 October the four groups reached a position to support the landings at Leyte Gulf. Halsey's order paraphrased the peremptory statement of mission handed down by Nimitz: "In case opportunity for destruction of major portions of the enemy fleet offer or can be created, such destruction becomes the primary task."[25]

To support these operations the Southeast Asia Command would intensify ground and air operations in Burma beginning on 5 October, emphasize air attacks on Bangkok and Rangoon from 15 to 25 October, and execute a naval bombardment and carrier strike against the Nicobars on 17 October. Although its Kweilin-Liuchow bases were threatened with capture, the Fourteenth Air Force agreed to use one heavy bombardment group against hostile air installations within 1,000 miles of Kunming, including Hong Kong, Hainan, and the Gulf of Tonkin. The XX Bomber Command would attack the Okayama air depot on Formosa with a B-20 mission from China about 14 October,† and North Pacific forces under Nimitz' command would harass the Kurils.[26]

Since Leyte was outside the operational range of planes based in New Guinea, Allied Air Forces' participation in the aerial preparations was necessarily limited. In addition to policing the Arafura and Celebes seas, initiating strikes against northeastern Borneo and the Sulu Archipelago, continuing to beat down the enemy in NEI, and providing aerial reconnaissance and photography, they would cooperate with the Third Fleet against hostile naval and air forces and provide

* It was also agreed that the 494th Bombardment Group, flying from the Palaus, would operate in the general Bicols area of southern Luzon.

† See above, pp. 137–39.

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convoy cover within their capabilities. The Allied Air Forces were fully responsible for the air garrison to be established on Leyte, and undertook to provide direct support of ground operations there as soon as fighters (A plus 5) and light bombers (A plus 15) could be based ashore. Coordination of land-based and carrier air operations was effected at a SWPA–Third Fleet conference at Hollandia on 29 September. In general, Allied Air Forces planes were to operate south of a strip along the north coast of Mindanao; they were not to attack targets in waters east of the island or in the Mindanao Sea. After heavy bombers were established at Morotai, they would extend their operations to include the Visayas other than Leyte and Samar.[27]

Kenney designated the Fifth Air Force as the air assault force. The Thirteenth Air Force would support the Fifth as requested; it would also move its command post to Morotai and undertake neutralization of the east coast of Borneo and a blockade of Makassar Strait. FEASC would move the V Air Service Area Command (V ASAC) and the Townsville Air Depot to Leyte.[28] The projected tactical air garrison, to be commanded by the 308th Bombardment Wing until Fifth Air Force Headquarters arrived, Whitehead considered larger than necessary; in the belief that there would be no worth-while targets within range of Leyte by A plus 30, he urged that SWPA streamline the Leyte garrison and move into Aparri at the north tip of Luzon within thirty days after A-day, but obviously no action was taken.[29]

Allied estimates of the Japanese situation on the eve of the invasion were optimistic. Sixth Army expected to meet the Japanese 16th Division; they thought that by A plus 3 units equivalent to another division would probably be concentrated there, and that under "most favorable" conditions the enemy could move a maximum of six regiments to Leyte from adjacent islands by A plus 6. Except for torpedo boat and submarine opposition, the Seventh Fleet did not anticipate anything more serious than a possible cruiser-destroyer strike launched from Borneo's Brunei Bay via Surigao Strait. Reasoning that the enemy carrier groups were not sufficiently well trained for combat, the Third Fleet thought it "most unlikely" that the enemy would risk any large portion of its fleet until the carriers were fully prepared for action.[30] Air estimates indicated that after Third Fleet strikes had seriously depleted Japanese air strength in the Philippines, the enemy would hold reinforcements to protect the Empire, the Ryukyus, and Formosa. As of A-day enemy air strength available for attacks against

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the Leyte beachhead was believed to be about 152 fighters, 179 bombers, and 9 reconnaissance planes. The bulk of these planes were probably based on Luzon, but they would stage through Visayan and Mindanao fields.[31] No one seems to have anticipated that the Japanese would employ the highly unorthodox *kamikaze* attacks, although FEAF had monitored a Radio Tokyo release that Terauchi had posthumously decorated the first of such pilots, a sergeant major who had dived his plane into a torpedo aimed at a Japanese convoy in the Andaman Islands on 14 April 1944.[32]

Preliminary Air Operations

Since many of the duties allotted to the Allied Air Forces in preparation for Leyte required continued missions into areas already under attack, there was no abrupt change in their targets during late September and early October. In the Celebes the Japanese were making determined efforts to keep their airfields open, and during September they moved an air regiment there for attacks against Morotai. Similarly, all components of the Allied Air Forces within range attacked Vogelkop and Ambon-Boeroe-Ceram bases, principally to prevent night raids against the concentration of FEAF heavy bombers being built up in northwestern New Guinea. Search planes and "snoopers" sought to deny the enemy use of the Makassar Strait while XIII Fighter Command, situated at Sansapor, began concentrating its effort on enemy small craft in the Ambon-Boeroe-Ceram waters. Except for the heavy bomber raids on Balikpapan,* there was virtually no enemy opposition and such Japanese planes as were brought into range of Allied attack seem to have been intended for offensive employment. Enemy night sorties against Allied bases were centered on Morotai, with a few raids against Sansapor, but after 9 September there were no more raids against the Allied airdromes at Geelvink Bay for the remainder of 1944.[33]

Other than searchplane harassment, Allied Air Force activity against the Philippines was limited during the last half of September. On 18 September twenty-seven Liberators of the 22d and 43d Bombardment Groups bombed enemy barracks near Davao while twenty-three Liberators of the 90th Group struck oil storage tanks nearby. Bomber crews reported that the Davao airfields had been repaired, but there was no interception and slight AA fire. Having noted during the

* See above, pp. 316–22.

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previous week a concentration of floatplanes at Caldera Point and about twenty Betty bombers at Wolfe Field, Zamboanga, a Navy PB4Y of VB-101 based at Owi dropped down through the cumulus just after dawn on 1 October to destroy three floatplanes and damage five others at anchor. Not satisfied, the PB4Y swept east across Wolfe Field, strafing and firing three Bettys. To make sure of the destruction the PB4Y circled, repeated its pass on the Bettys, and then escaped unscathed. On 7 October, following another such early morning PB4Y attack which destroyed four more floatplanes and a Betty, nineteen B-24's of V Bomber Command penetrated bad weather to bomb oil storage tanks and warehouses at Zamboanga; thirty-nine 8th Group P-38 escorts destroyed six floatplanes, fired three cargo ships, and strafed San Roque airdrome. Ship-sightings during the following week revealed that the Japanese had given up regular routings through Makassar.[84]

Pacific Fleet operations began on 9 October with a bombardment of Marcus Island, a maneuver which Halsey had conceived "to bewilder the Japanese high command." Following in the wake of a typhoon, Task Force 38 surprised Okinawa and the Ryukyus on 10 October, and by that evening about ninety-three enemy planes had been destroyed. According to plan, the carriers moved southward and launched a fighter sweep over northern Luzon in the afternoon of 11 October; next morning they began attacks against Formosa, only to discover that the Japanese had not been deceived. Activating SHO I and SHO II, the Japanese rushed the Second Air Fleet southward, and, having been permitted to reinforce Formosa because of the delay occasioned by the Luzon feint, they were able to expend aircraft lavishly. Most of their efforts to reach the American fleet on the 13th were unsuccessful, but at dusk enemy planes finally broke through and torpedoed the American heavy cruiser *Canberra.* Determined to tow out the cruiser, Halsey sent fighter sweeps back to Formosa on the 14th, but during that evening the Japanese broke through again and torpedoed the heavy cruiser *Houston.* Grossly exaggerated Japanese claims that fifty-seven American warships had been sunk, apparently credited in their Imperial Navy Headquarters, set off a wave of celebration in Japan, exhilaration no doubt fanned by the issuance of a three-day ration of "Celebration Sake." On the evening of the 14th the Japanese fleet ordered a naval task force out of Bungo Strait in the homeland to mop up the crippled American

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ships. This order was decoded by U.S. Navy monitors and reported to Halsey. Although the exact size of the enemy force was garbled in the original message, it seemed that Halsey would have his desired fleet engagement. Deploying his cripples as bait, he radioed MacArthur that no fast carrier support would be made available for Leyte until further notice.[35]

Coming at a time when Seventh Fleet minesweepers and Sixth Army rangers were en route to Leyte Gulf, the news was most discomforting to SWPA. Kenney nevertheless extended his search patterns to cover the southern Philippines and, informing Streett of the Third Fleet's withdrawal, ordered installation of Thirteenth Air Force heavy bombers at Morotai, squadron by squadron as space became available. Effective at 0900 on 18 October, SWPA cleared targets in the western Visayas, including Bohol, Cebu, Negros, and Panay, for attack by the Allied Air Forces. Relieved of its missions against Balikpapan, the Fifth Air Force began heavy bomber attacks against Mindanao and directed the 310th Bombardment Wing to institute long-range fighter sweeps over Mindanao from Morotai.[36]

The effort against Mindanao was especially designed to immobilize the Japanese garrisons there. Thus on 16 October fifteen P-38's of the 35th and 80th Fighter Squadrons flew to Cagayan on the north-central Mindanao coast, where they fired three vessels in the harbor, strafed and put to flight a troop of mounted cavalry, strafed a Sally bomber and a staff car at Cagayan airdrome, and then swept down the highway to Valencia, destroying fifty to sixty military vehicles along the road. The next day, fifteen P-38's of the 36th Squadron destroyed a floatplane and left a cargo vessel burning at Zamboanga, losing one P-38 from unknown causes. That day three groups of V Bomber Command B-24's, fifty-nine planes in all, attacked enemy barracks and port installations at Ilang on the eastern coast of Davao Province. On 18 October the heavies bombed Menado in the Celebes, and the 310th Bombardment Wing continued its daily fighter sweeps into Mindanao, concentrating on the enemy's communications. On 19 October twelve B-25's of the 71st and 823d Squadrons, flying their first offensive mission from Morotai, found no targets at Bohol Island and finally bombed Malabang Field on Mindanao. The next day, A-day at Leyte, forty-six V Bomber Command Liberators placed ninety-nine tons of bombs on Japanese headquarters buildings at Davao; twelve B-25's of the 71st and 823d Squadrons bombed Dumaguete air-

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drome on Negros Island; twelve P-38's of the 80th Squadron strafed trucks and barges in southern Mindanao; and sixteen P-47's of the 40th and 41st Squadrons swept Bacolod and Fabrica airdromes on Negros. Thus the Fifth Air Force supported the Leyte invasion only indirectly and at extreme range,[37] and from Chengtu XX Bomber Command executed its missions against Formosa on 14, 16, and 17 October with little difficulty.*

Meanwhile, Halsey's trap almost worked. An enemy force of cruisers and destroyers came on 15 October, but a Japanese pilot seems to have sighted Halsey's powerful fleet units and given the alarm, for the Japanese force withdrew before it could be engaged. Having extricated his cripples, Halsey returned to support of the Leyte landing. One fast carrier group struck Luzon on 17 October, three on 18 October, and two on 19 October. On the 20th, Task Groups 38.1 and 38.4 were ready to support the landings at Leyte with strikes against Cebu, Negros, Panay, and northern Mindanao, while Task Groups 38.2 and 38.3 stood by to the northward.[38]

Once again the Third Fleet carriers had revealed that they were a tremendously powerful destroyer of enemy aircraft: between 10 and 18 October (little opposition was found after the 18th) carrier pilots claimed destruction of 655 airborne and 465 grounded aircraft, and during the same period the enemy admitted a total loss of about 650 planes. The Third Fleet had lost only seventy-six planes from combat and operational causes and had suffered only two cruisers crippled while attacking a powerful and thoroughly alerted air base area. Yet the Third Fleet did not effect any substantial neutralization of the enemy's air facilities, either on Formosa or in the Philippines. During six days of operations against Formosa, Third Fleet carriers had expended only 772 tons of bombs against air installations while in three small raids the B-29's had dropped more than 1,166 tons upon their targets. Significant to Allied operations in the Philippines was the fact that the Japanese began moving new planes into Formosa and Luzon shortly after the Third Fleet carriers retired from each area.[39]

Leyte Gulf

At about 0820 on 17 October elements of the 6th Ranger Infantry Battalion went ashore on Suluan Island; by 2000 hours that day the remainder of the battalion had seized nearby Dinagat Island. These

* See above, pp. 131, 137–39.

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preliminary operations were complicated by the high seas thrown up by a typhoon which passed just north of Leyte on 17 October and failures of minesweeping gear, conditions which delayed scheduled landings on Homonhon Island until 1045 on 18 October. After patrols failed to disclose Japanese on Homonhon, however, the scouts were able to report that the islands guarding Leyte Gulf were secure. Minesweepers and underwater demolition teams, covered by shore bombardment from Seventh Fleet battleships and twelve CVE's, cleared the routes into the gulf by midnight, 19 October, while the transports carrying the X Corps from Hollandia and XXIV Corps from Manus were nearing the entrance channels.

On 20 October in perfect invasion weather, intensive naval fire began off Dulag at 0700 and off San Jose an hour later, increasing as H-hour approached. At 0900 the 21st Infantry, supported by an escort carrier group, began unopposed landings at the southern tip of Leyte and on Panaon Island. Fifteen minutes before H-hour at Leyte Gulf, LCI's smothered the main landing beaches with rockets, while planes from the escort carriers and Third Fleet conducted scheduled strikes farther inland. At 1000 hours X and XXIV Corps started ashore to their assigned beaches near San Jose and Dulag. Neither landing was difficult because the Japanese had withdrawn from carefully prepared beachhead positions.[40] And it was well that this was so, for the short naval bombardment, although awesome, had not been too effective. Maj. Gen. Yoshiharu Tomochika, Thirty-fifth Army chief of staff, expressed amazement that the covering bombardment had been so short. It had destroyed most of the guns emplaced on the beach, but damages to defiladed positions had been slight.[41] Ashore on the afternoon of A-day, Kenney found dozens of concrete pillboxes which were untouched. Even the earthworks showed little damage. "If these Japs had been of the same calibre of those . . . at Buna or around Wau and Salamaua," he wrote Arnold, "we would have had a casualty list that would have rivalled Tarawa."[42] Ground troops noted the same disparity between prepared defenses and enemy activity.[43] Japanese air attacks during A-day were sporadic but bitter; at 1615 hours an enemy plane torpedoed the cruiser *Honolulu* and at 0646 next morning a suicide bomber disabled another cruiser, the *HMAS Australia*.[44]

For several days immediately following the initial landings, the Sixth Army offensive continued under favorable circumstances: Tacloban airstrip fell to X Corps on 20 October, while XXIV Corps

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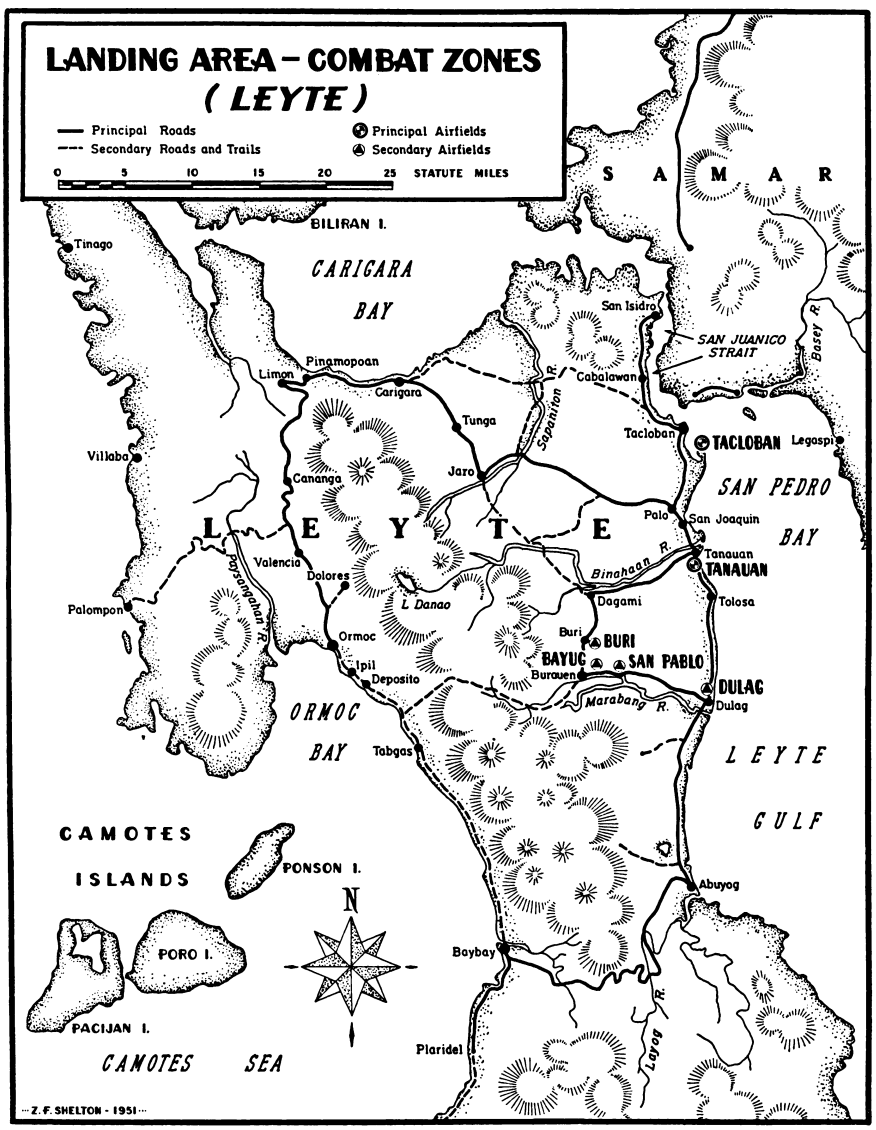
took Dulag strip next day. Repairs at Tacloban strip began immediately, but the desire of LST skippers to dump their cargoes and depart caused wholesale debarkations at Cataisan Point, the extremity of the



narrow peninsula on which the strip lay. The resultant crowding and confusion was estimated by Sixth Army to have delayed completion of minimum airfield facilities by as much as two days, and Kenney finally threatened to bulldoze the dumps into the sea. Except for the sup-

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port aircraft parties and signal air warning troops which accompanied the assault forces, the first troops to unload were headquarters of the 308th Bombardment Wing and headquarters detachments of the Fifth Air Force and of its immediately subordinate commands, all arriving on A plus 2. Ground echelons of the 49th and 475th Fighter Groups, the 421st Night Fighter Squadron, and the 305th Airdrome Squadron arrived on A plus 4.[45]

The historical officer of the 49th Group captured much of the excitement of the day:

> On the morning of the 24th all hands were up at 0400 as we entered San Pedro Bay. Star shells periodically floated down over Jap defensive positions far inland and shell fire flashed in the darkness.
>
> As it began to dawn smoke screens from each ship began to obliterate views of the shore and shipping. One enlisted man complained loudly, "Hell, I've waited two years to see the Philippines and when I get here they lay a screen so I can't see a damn thing."
>
> Shortly after 0800 aerial activity began to take place as dive bombers went to work on Jap positions inland. The action came closer when a Jap plane went down in flames, crashing beyond the ridge of hills offshore. Then another fell flaming along the shore. A third Jap, a twin-engined bomber, trailed smoke and headed out over the harbor. It suddenly fell off on one wing and crashed into the water alongside a Liberty ship. At this time the "stuff hit the fan" when all the guns in the harbor opened up with a terrific barrage as Jap planes pressed home their attack. Flaming enemy aircraft literally rained from the sky under the accurate 5 inch destroyer guns, Bofors, and 20mm's. When our own ship's guns opened up the men scrambled for cover. A Sally bomber headed towards us from directly ahead. A terrific ack-ack barrage caused it to smoke and it swerved to the right, bounced twice and hit the side of an LCI about 1000 yards off our port side, engulfing the ship in flaming gasoline. 200 yards in front of our LST a mine sweeper burst into flames. . . .
>
> By 0900 the sky was clear again. Our LST reached shore and the bow doors opened, revealing a good hundred feet of water between our ramp and the dry land. . . . With the aid of a bulldozer and native woven sand bags the men went to work building a jetty. During this time there was a red alert but no enemy aircraft interrupted work. Working in shifts the men had the jetty completed by 1600 and the unloading began. In order to meet the unloading deadline it was necessary to pile most of the bulk on the beach to be hauled into camp the next day.
>
> Tentage and equipment arrived in camp shortly before dark. The camp detail put up what they could but most of the men spent the night in slit trenches swatting the vicious mosquitos who seemed to be making up for the long absence of Yank flesh from their diet.[46]

In spite of beach congestion and heavy Japanese air attacks, most of the A plus 4 convoy was able to depart Leyte Gulf that evening. Air units began building camps adjacent to Tacloban strip.

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Japanese air attacks on the Leyte beachheads were only preliminary to their main defensive reaction. The story of the naval engagement has been told in scholarly fashion from both Allied and Japanese points of view,* but its broad outline remains an essential part of the air narrative, for at Leyte American carriers were performing the familiar role of SWPA's land-based aircraft. On 18 October, as soon as the American intention to land near Tacloban was confirmed, Japanese naval headquarters ordered execution of SHO I and set X-day, the date for a fleet engagement, for 22 October and then, because of logistic delays, for 25 October. The First Diversion Attack Force, commanded by Vice Adm. Keno Kurita and composed of the main battleship and cruiser strength of the Japanese Navy, reached Brunei on the 20th, fueled, and sortied in two echelons on the 22d. The major part of the force, under Kurita, skirted the western coast of Palawan and headed eastward toward San Bernardino Strait; a smaller force—two battleships, one heavy cruiser, and four destroyers under Vice Adm. Shoji Nishimura—sailed through the Sulu Sea to force an entrance at Surigao Strait. The Second Diversion Attack Force—two heavy cruisers, one light cruiser, and four destroyers under Vice Adm. Kiyohide Shima—had left waters off Formosa on the 21st and moved south to assist in the forcing of Surigao Strait. On the afternoon of the 20th, the "Main Body"—actually only four carriers with partial and poorly trained carrier air groups, two converted battleship-carriers, three light cruisers, and eight destroyers under Vice Adm. Jisaburo Ozawa —had left Bungo Strait, shaping a general course toward Luzon to decoy American fleet units northward. Planes of the Second Air Fleet, which were supposed to cover Kurita, began arriving on Luzon shortly before the 23d.[47]

Kurita's orders were to break through to Tacloban at dawn on the 25th, and after destroying the American surface forces, to cut down the troops ashore. This he intended to do by forcing his fleet through San Bernardino Strait on the night of the 24th while Nishimura passed through Surigao for a junction with Kurita at Leyte Gulf. The plan was bold but not without serious defects. Both the First and Second Air Fleets had been drained of air strength by the effort to defend Formosa. Coordination between the surface commanders and shore-based air fleets was imperfect, and coordination with the Fourth Air

* C. Vann Woodward, *The Battle for Leyte Gulf* (New York, 1947), and James A. Field, Jr., *The Japanese at Leyte Gulf, the Sho Operation* (Princeton, 1947).

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Army would prove impossible. Moreover, there were, in effect, three independent fleet commanders afloat; while Kurita commanded Nishimura, Shima was independent of both and outranked Nishimura.[48]

Searchplane and submarine sightings alerted the Allies as early as 18 October, and additional reconnaissance caused Halsey early on 21 October to request that MacArthur withdraw his transports and other vulnerable shipping from Leyte Gulf as quickly as possible.[49] MacArthur replied bluntly that the basic plan of operation, whereby for the first time he had moved beyond the range of his own land-based air support, had been predicated on full support from the Third Fleet. He was bending every effort to expedite installation of land-based planes at Leyte, but he considered that the Third Fleet's covering mission was its essential and paramount duty.[50]

By early morning on the 23d, Seventh Fleet intelligence had fitted together evidence which clearly indicated that Leyte was the Japanese fleet objective. At daybreak that morning Seventh Fleet submarines, covering Balabac Strait sank two heavy cruisers and damaged a third so badly that it had to turn back.[51] One of the cruisers sunk was Kurita's flagship, but he shifted to the battleship *Yamato* and continued northeastward. In the confusion Nishimura slipped through Balabac Strait and headed directly for Surigao. Halsey disposed his task groups as follows: 38.3 east of Luzon off the Polillo Islands, 38.2 off San Bernardino Strait, and 38.4 off Surigao Strait. He had already sent Task Group 38.1 back toward Ulithi to rearm and reprovision, and it was not scheduled to be ready until dawn on 28 October.[52]

Launching searches at dawn on the 24th, Task Group 38.2 located Kurita southeast of Mindoro at 0810, and Task Group 38.4 intercepted Nishimura approaching the entrance of the Mindanao Sea at 0905. Nishimura was attacked at the time of the initial sighting and by two other Task Group 38.4 strikes during the morning, but, despite some damage, his ships continued toward Surigao. Shima was not sighted until later in the morning. As soon as all sightings were in, Halsey ordered Task Groups 38.3 and 38.4 to concentrate toward San Bernardino, striking Kurita en route. Task Group 38.3 was hindered by Japanese air attacks which damaged the light carrier *Princeton* so badly that it had to be sunk, and Task Group 38.4 had to give some attention to Nishimura. Consequently the major attacks against Kurita fell to Task Group 38.2, the weakest of the three groups, with its one heavy and two light aircraft carriers. During the afternoon all three

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groups sent out strikes, and Kurita lost the powerful battleship *Musashi* and one badly damaged cruiser which had to turn back with its destroyer-escorts. After experiencing more than 250 American sorties and being unable to secure air cover, Kurita at last decided to reverse course temporarily, an action initiated at 1648 hours.[53]

All day on the 24th, Halsey was anxious about the location of the Japanese carriers. As an air-indoctrinated admiral, he reasoned that they should have been committed to the attack somewhere. At the same time Ozawa seems to have been just as anxious because his position had not yet been discovered. He launched a "scratch force" of seventy-six mixed-type planes against the American carriers at 1145 but was still not located as he steamed southward off Luzon; finally he "opened up on the radio for the purpose of luring." Then, at 1635 a single American plane sighted Ozawa's "Main Body," and the Japanese, with some relief, heard it give the alarm.[54] Thus at 1730, Halsey at last knew the location of the enemy carriers.

By radio at 1512 he had announced plans for a surface engagement with the enemy which included the formation of Task Force 34—a battleship unit to be commanded by Vice Adm. Willis A. Lee. But the "inflight" reports of his carrier pilots persuaded Halsey* that Kurita had been so badly damaged that he was incapable of doing serious harm even if he got through San Bernardino. Erroneous intelligence also indicated that Ozawa's fleet comprised some twenty-four ships and constituted "a fresh and powerful threat."[55] Halsey knew that MacArthur expected him to guard San Bernardino, but he decided it would be "childish" (so he explained to Nimitz the next day) to do this while the Japanese carriers were forming for attack.[56] Admiral Lee, an old hand in Pacific operations who now suspected a Japanese ruse, recommended that Task Force 34 be formed for guard off Surigao;[57] Halsey, however, decided not to divide his strength. Although "gravely concerned" about Kinkaid's ability to deal with the enemy at Surigao, he decided to leave San Bernardino unguarded and steam northward with full strength for an attack on the enemy carrier force at dawn—a decision announced at 2024.[58]

Off Leyte, Kinkaid had been making plans for his Seventh Fleet units to engage Nishimura and Shima. As it became evident that the Japanese would attempt to force Surigao Strait on the night of

* With his flag aboard a battleship, he was not himself in a position readily to interrogate the pilots.

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24/25 October, he augmented Rear Adm. J. B. Oldendorf's Task Group 77.2 and ordered it to dispose the old battleships and cruisers for a night engagement. Reassured by Halsey's message (which he interpreted as an order) indicating that Task Force 34 would be formed, and again by Halsey's dispatch that he was proceeding northward with *three groups*, Kinkaid supposed that San Bernardino was guarded and concentrated all his guns off Surigao.[59] During the early morning hours of 25 October, first employing torpedoes and then utilizing his battle line to "cross the 'T' " of the approaching Japanese columns, Oldendorf decidedly defeated and put Nishimura to flight: only a cruiser and destroyer escaped the strait. Shima's fleet, following by half an hour, first suffered a cruiser damaged by PT boat torpedoes, attempted an attack only to have the flagship damaged, and then retired without pressing the attack. In this battle of Surigao Strait the Seventh Fleet did not lose a single vessel, but its supply of fuel, torpedoes, and armor-piercing ammunition (it had been armed principally for shore bombardment) was almost expended, and it was no match for the new opponent looming up on the north.[60]

When American air attacks ceased on the 24th, Kurita at 1714 again reversed his course and headed for San Bernardino. His orders to continue the attack confirmed by a message from Tokyo signed by CINC Toyoda, Kurita reassessed his schedule and notified the other forces that he would pass San Bernardino at 0100 on 25 October and arrive at Leyte Gulf at about 1100. With spectacular navigation, he drove his fleet through the narrow and reef-studded straits at twenty knots, finding not so much as an American picket boat on the other side; whether Admiral Lee, with all of the new American battleships, could have repeated Oldendorf's success there must remain a matter of conjecture. Although warned by his night snoopers that Kurita had turned again toward the straits, Halsey discounted the reports and continued to steam northward at full speed.[61]

Early in the morning of 25 October, the sixteen available escort carriers of Task Group 77.4, ranging by units off Samar and Leyte, had sent out two strikes, the last of which had finished Nishimura's sole escaping cruiser. The first indications of Kurita's presence came at 0645 when Task Unit 77.4.3 noticed AA fire and immediately received radar contacts of a force bearing toward it from the north, about eighteen miles distant. Eight minutes later the pagoda masts of Japanese capital ships loomed over the horizon, distance about seven-

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teen miles. In accordance with standing orders, all CVE aircraft were to be kept loaded with 500-pound bombs and torpedoes, but many of the 109 launched by Task Unit 77.4.3 carried a miscellaneous load of depth charges, 100-pound bombs, and torpedoes. They attacked nonetheless gamely while Kurita at 0658 began to open up on the six forward carriers with his 18-inch guns from fifteen miles—firing that opened the battle off Samar.[62]

Kinkaid was in a desperate situation: it was entirely improbable that his thin-skinned "jeep" carriers could survive in so unequal a struggle. Moreover, his old battleships, at the moment deep in Surigao Strait looking for cripples, conceded a five- to six-knot advantage to the Japanese battleships. Even if they could get into position, as Kinkaid immediately ordered, they could be outmaneuvered until their dwindling ammunition was depleted, and Kurita was within three hours sailing time of Leyte Gulf. Kinkaid had already asked Halsey if Task Force 34 was guarding San Bernardino, but Halsey, keeping radio silence, did not reply until 0648, by which time Kurita had, in effect, already informed Kinkaid that Task Force 34 was not there. Within fifteen minutes after the first sighting off Samar, Kinkaid sent Halsey three dispatches asking immediate aid.[63]

Miraculously enough, the escort carriers of Task Unit 77.4.3 held Kurita back. Although 18-inch projectiles tossed them about severely, the advanced CVE's remained afloat. Hits by smaller-caliber armor-piercing shells tore jagged holes but the thin skins did not detonate the projectiles. Finally, at 0826 one of the carriers went down under point-blank battleship fire. Destroyers and destroyer-escorts darted in and out of an effective smoke screen to launch torpedo salvoes with little expectation of survival, for they closed to within 6,000 yards of the Japanese capital ships. Yet, only two Allied destroyers and one destroyer-escort were sunk. An opportune rain squall, sheltering the forward CVE's at a moment when the enemy had closed to less than 25,000 yards, provided a welcome respite from Japanese salvoes, but the escort carriers of Task Unit 77.4.1 were attacked by six Japanese suicide planes, two of the carriers being severely damaged. A third, evidently torpedoed by a submarine, was listing but still afloat. Since the planes striking from the escort carriers could not return home, many of them set down at Tacloban, although it more nearly resembled "a plowed field" than an airstrip. Here they were refueled and bombed-up by AAF crews, who knew nothing about Navy aircraft,

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and those pilots who could manage took off for repeat strikes.[64] "Anybody who thinks the Army and Navy can't get along," reported one observer, "should have seen those boys working together."[65]

Although the number of American planes attacking was few at any one instant, their assault was later described by Kurita's operations officer as very aggressive, impressively well coordinated, and almost incessant. Kurita, who was baffled by smoke screens and denied any aerial observation, was impressed by the show of resistance, and hearing some of the clamor for reinforcement, he became more and more apprehensive. At 0911, although still intending to make Leyte Gulf, he ordered his fleet to wheel northward for regrouping. He knew that he was authorized to sacrifice his fleet to achieve the mission, but reasoning that he was now so far behind schedule that the "soft" invasion shipping must have escaped the gulf, he now questioned his mission. He knew that he could not expect to rendezvous with Nishimura. He had intercepted a voice radio message that the American carriers off Samar wanted help and an answer that "it can be expected two hours later." He had overestimated the force opposing him, believing the CVE's to be *Enterprise* class and assuming that a part of the destroyer screen were cruisers, a belief no doubt strengthened by his having lost three heavy cruisers to the CVE planes and having had another crippled by a destroyer's torpedo. When he heard voice broadcasts indicating that planes were being concentrated on shore at Tacloban, he feared that once inside Leyte Gulf he "would be sure to be attacked by very many planes, like a frog in a pond." Thus by 1236 hours, he determined to return north and, as he explained later, engage a force falsely reported to him off Samar.[66]

That he made this decision was fortunate for the Allies. Rear Adm. C. A. F. Sprague, commanding the CVE's in heaviest action, was sure that Kurita could have destroyed all the escort carriers;[67] Kinkaid thought that he could well have entered Leyte Gulf.[68] There, Kurita could have sunk enough cargo vessels to embarrass the Allied cause, and by using his heavy guns against the Allied command posts near the shore he could have left the American forces in a serious plight. At the very least, as Kenney wrote Arnold, Kurita "would have given our planning section a few headaches figuring how long we would postpone our future operations while we also figured how we would feed and supply 150,000 or more troops that we had just dumped ashore."[69]

Far away to the north, Halsey was closing upon the Japanese "Main

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Body" at dawn on the 25th. He had formed Task Force 34 during the night and it was forging about ten miles ahead of the carriers. When dawn searches revealed the Japanese ships off Cape Engaño, Luzon, Task Force 38 began to launch its airplanes for strikes. By 1108 three of the enemy carriers were reported dead in the water, and only about forty-five miles separated the two forces. Halsey, who had been receiving a stream of urgent messages from Kinkaid, ordered Task Group 38.1 to reverse its course and return to Kinkaid's aid without replenishing, but continued appeals from Kinkaid did not persuade Halsey to send further reinforcement. As he explained in his memoirs: "It was not my job to protect the Seventh Fleet. My job was offensive, to strike with the Third Fleet, and we were even then rushing to intercept a force which gravely threatened not only Kinkaid and myself, but the whole Pacific strategy."[70] At about 1000, however, Halsey received two messages which staggered him. Kinkaid signaled in the clear: "Where is Lee? Send Lee." Nimitz, at Pearl Harbor, radioed: "The whole world wants to know where is Task Force 34." Halsey later discovered that a cryptographer had padded Nimitz' simple query, but, admittedly in a complete rage, Halsey broke off the pursuit and informed Kinkaid that he was heading south to his assistance. He began regrouping and at 1600, with two of the fast carrier groups and two of the fastest battleships, he started the run toward San Bernardino at twenty-eight knots.[71] Mitscher, with one carrier group and a cruiser screen, remained to finish off Ozawa's four aircraft carriers.

By this time, however, all that remained was the pursuit phase of the battle in which aircraft on each side sought out crippled vessels. The Japanese scored first at 1049 when a wave of Zeke fighters struck Kinkaid's advanced CVE unit and sank one of its small carriers, shortly after Kurita had broken off. Under way from fueling at 0940, Task Group 38.1 launched a long-range strike on Kurita's fleet at 1030. The strike by lightly loaded planes claimed only damages, and some of the American planes had to ditch on their return trip; others landed at Tacloban. After a second strike launched at 1245 from closer range also claimed no more than damages, at 1723 the valiant escort carrier planes hit Kurita for the last time. Halsey reached San Bernardino at midnight on the 25th, but only one destroyer of Kurita's force remained behind to become the victim of a small surface engagement at 0135 on the 26th. Having passed the straits at 2130 of the preceding day, Kurita raced westward with his remaining four

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battleships, four cruisers, and seven destroyers. East of San Bernardino, Halsey gathered the Third Fleet and next morning his carrier aircraft overtook Kurita near Panay and sank a cruiser and a destroyer.[72] This ended the naval action.

Although AAF leaders had known of Japanese fleet movements toward Leyte, they remained dependent for the most part on radio interceptions for information of actual sightings. This failure in coordination between naval and air forces, however, was not so important a limiting factor as was the distance of FEAF bases from the scene of action. Morotai, the nearest base, had been in Allied possession for hardly more than a month and its facilities were as yet barely equal to the requirements of one heavy bomber squadron. Nevertheless, the Fifth Air Force on the 24th alerted the 38th Group's B-25's at Morotai and directed that a force of the 345th's medium bombers staging back to Biak from a mission to North Borneo be stopped and held in readiness; on the same day, the 72d Squadron of 5th Bombardment Group was ordered up to Morotai. At Biak, the Liberators of the 22d, 43d, and 90th Bombardment Groups were briefed on a "golden opportunity" to destroy enemy fleet units.[73] At no time did Kurita come within range of the B-25's at Morotai. After a hazardous predawn take-off, the V Bomber Command had all available heavies airborne on the morning of the 25th. Wing rendezvous was scheduled for a point on the northern coast of Mindanao at 0900, but towering cumulus blocked the rendezvous, necessitating movement of the assembly about twenty miles westward to Tagolo Point. When the fifty-six B-24's began converging from all directions upon this one assembly point, the resulting confusion was compared to a "glorified combination of 'ring-around-a-rosie' and 'hide-and-go-seek.'" With no information about the location of Japanese fleet units (Whitehead attributed failure of the whole mission to lack of intelligence data), the leader by chance had picked the new assembly point in full view of the Japanese light cruiser *Kinu* and an escorting destroyer, both of which livened the occasion with AA fire.* Twenty-eight P-38's on escort duty from Morotai, adding their radio chatter to already overburdened frequencies, jammed all communications, and the bombers could effect no regular formation. When nothing better was permitted, the B-24's attempted to bomb the speedy vessels (the cruiser

* The *Kinu*, bent on picking up troops at Dapitan, had not been damaged by prior fleet action. See below, p. 376.

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managed 16 knots) either in squadron flights or individually; with the bombers at 10,000 feet, the Japanese skippers had fully 25 seconds after bombs were away to maneuver, and none of the bombers scored more than near misses. Seven B-24's of the 72d Squadron which had arrived from Morotai with the P-38's had no better luck, and thirty B-25's sent from Morotai came within sight of the ships while still under attack, only to turn back because of a shortage of fuel. The whole mission was "a dismal failure."[74]

Next day, the Thirteenth Air Force sent its 5th and 307th Groups out from Noemfoor and the Fifth got off a Liberator force of twenty-two planes from Biak and Owi. The crippled light cruiser *Abukuma*, spotted earlier with its escorting destroyer *Ushio* as they departed Dapitan en route for Coron Bay, was attacked by twenty-one B-24's of the 5th Group, which scored one hit upon it at 1006 and set topside fires. A few minutes later, three 33d Squadron planes, belonging to a flight of twenty-two Fifth Air Force heavies just arrived, scored two more hits on the cruiser. Spreading fires and explosions soon doomed the vessel. The *Ushio* moved alongside and picked up survivors, and at 1242 the *Abukuma* sank off the southwest coast of Negros.[75]

Between 1055 and 1059, twenty-seven Liberators of the 307th Group met Kurita's retreating force midway between Panay and the Cuyo Islands. Immediately upon sighting this force, the group leader crossed the course of the column of vessels, causing them to initiate evasion and at the same time putting the sun behind the bombers. Selecting the shortest bomb runs and dropping 500 feet (the lowest element bombed at 9,500 feet), the group chose the *Yamato* and the *Kongo* and placed two squadrons over each of the battleships. Neither squadron scored direct hits, but fragments from a dozen 1,000-pound bombs caused numerous topside casualties on the *Yamato* and severely wounded Kurita's chief of staff. The decision to lose altitude before attacking proved fortunate, for even with this maneuver the barrage fire brought down three B-24's and damaged fourteen others. Kurita's forces had discovered how to turn a part of their heavy batteries skyward, and they fired on the Liberators from a distance of nearly eight miles.[76] At 1115 hours, eight 72d Squadron heavies from Morotai bombed an unidentified light cruiser west of Panay, rocking it with near misses when, just as the bombs were away, it swung violently left into the bomb pattern.[77]

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So ended the organized fighting for control of Leyte Gulf, although the Japanese were yet to lose a few additional destroyers and a cruiser in attempting to rescue survivors and land troops at Leyte. All told, the Japanese lost three battleships, four aircraft carriers, six heavy cruisers, four light cruisers, and some eleven destroyers. Japan was no longer a formidable naval power, but the Allied victory was not yet complete. Kurita, who escaped with a force including four battleships to Brunei Bay, and Ozawa, who withdrew to Empire waters with ten of his original seventeen ships, still possessed raiding capabilities. Especially important were Kurita's battleships, which would outclass the Seventh Fleet cruisers once the old U.S. battleships were withdrawn from loan to SWPA. At Navy request XX Bomber Command from Kharagpur bombed Singapore's No. 1 drydock on 5 November in a successful attempt to deny Kurita those facilities for fleet overhaul.* On 16 November Thirteenth Air Force B-24's attacked the anchored fleet units at Brunei, but they inflicted only light near-miss damages. Kurita still maintained a force in being which could threaten Allied operations in the Philippines.[78]

The Campaign for Leyte

Although the Japanese had lost a prime opportunity when Kurita turned back, Allied troops on the Leyte beachhead remained in jeopardy. In addition to the two escort carriers sunk in the morning action of 25 October, more than half of Kinkaid's remaining carriers had been incapacitated. Taking advantage of the lack of fighter cover over the beachheads, Japanese planes in twelve attacks between 1200 and 1600 hours sank two LST's at Tacloban, destroyed a warehouse, and damaged a concrete dock. At 1639 Kinkaid called for immediate installation of FEAF fighters and followed this during the night with a request for Halsey to cover Leyte with one fast carrier group until the land-based planes arrived.[79] The Japanese lent emphasis to the need for this assistance by making no less than sixteen attacks on Tacloban between 0700 and 0939 on the morning of 26 October, and shortly after noon a *kamikaze* incapacitated another CVE off Leyte.[80] Mitscher, after completing his strikes that day in the north, reported that his food and ammunition had been almost completely exhausted —a condition that threatened to cause withdrawal of other naval units well in advance of the nine additional days through which, according

* See above, p. 156.

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to the original directive, the Navy was responsible for air defense of the beachheads.[81]

Kinkaid managed to keep ten of his battered escort carriers off Leyte until 29 October. Two of Halsey's fast carrier groups were forced to withdraw for replenishment shortly after the fleet engagement, but Task Group 38.4 stood by to provide local patrols at Leyte until the 29th, when Halsey was permitted to withdraw all of his fast carriers. Seeking to lighten the enemy air attacks before its departure, Task Group 38.2 struck Luzon on the 29th only to have a *kamikaze* crash into the carrier *Intrepid*. On the 30th, before it had left Leyte waters, Task Group 38.4 went through another flurry of suicide assaults, receiving serious damages to two of its four fast carriers, the *Franklin* and *Belleau Wood*.[82] For all their great capacity to inflict damage on the enemy, the carriers could not provide adequate beach cover in such an operation as that at Leyte.

Kenney had responded promptly to Kinkaid's emergency call for help, but in the face of the greatest difficulties. On 26 October the Fifth Air Force staged P-38's of the 7th and 9th Squadrons to Morotai, while at Tacloban ground crews were pressed into service to speed the laying of steel matting on a strip where twenty-five out of seventy-two landings attempted by Navy planes on the preceding day had ended in accidents. The men worked alongside the engineers night and day, sprawling into nearby gullies and slit trenches as Japanese planes returned for more blood. Shortly after noon on the 27th, just as the last metal was laid in the center of a 2,800-foot landing surface, 34 P-38's buzzed the strip and then settled down to stay —the first American Army planes to base in the Philippines since 1942. One of the P-38's was wrecked in landing, but the remainder of these 9th Squadron planes refueled at once, and before the day was over their pilots had shot down four enemy raiders.[83] Since there had been "a lot of conversation . . . to the effect that the Navy would take control of the P-38's as soon as they landed," MacArthur had ordered the Allied Air Forces to assume the mission of direct support at Leyte at 1600 on 27 October.[84] He also allocated all land targets in the Philippines to the Allied Air Forces and directed the Third Fleet to attack such targets only after coordination. Kenney later assured Arnold that there had been no hard feelings about the matter. MacArthur had simply "decided that as long as the Navy had no air of their own to do the job, the Army Air would assume the responsibilities."[85]

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When the Allied Air Forces undertook the defense of Leyte on 27 October, they had a temporary fighter control center manned by the 49th Fighter Control Squadron, six radars, a direction-finder station, ground and ship antiaircraft artillery, an operating flight strip at Tacloban, and thirty-three P-38's, all under the 85th Fighter Wing. Although these signal devices met assault requirements, heavy rains and impassable roads made the installation of heavier signal warning equipment difficult and delayed completion of the permanent defensive establishment. Radar coverage, however, was gradually supplemented by ground observers of the 583d and 597th Signal Air Warning Battalions set ashore on Mindanao, Homonhon, Negros, Cebu, Panay, and Masbate to operate with the guerrillas in Japanese-held areas, using pack radar sets and reporting by radio.[86]

Jammed together along the strip for want of dispersals, the P-38's were an easy target for Japanese raiders. At dusk on 27 October 12 Oscars and Vals dropped 100-pound bombs around Tacloban and repeatedly attempted to strafe the strip. After a two-hour lull, night raiders resumed the attack shortly before midnight and continued with slight interruptions until dawn. The 28th was relatively free of attack, but shortly after dawn on 29 October, one Oscar strafed Tacloban, destroying a P-38 and damaging three others.[87] Operational accidents further reduced their number, and weather from a typhoon which centered near Leyte on the night of 28/29 October prohibited reinforcement by the remainder of the 49th Group. Although the P-38's had destroyed some ten Japanese planes, the force had been reduced to twenty flyable aircraft on the morning of 30 October. That afternoon 8th Squadron planes augmented the strength of the interceptor force, and six Japanese planes were shot down in scattered contacts over the island during the day. On the 31st six P-61's of the 421st Night Fighter Squadron flew to Tacloban, now a 4,000-foot steel strip;[88] on the morning of 1 November, however, the situation was once more critical. Two heavy early morning raids cratered Tacloban strip, damaged a P-38, sank a destroyer, and severely damaged three vessels, causing Kinkaid, who foresaw inevitable destruction of his combat ships without adequate fighter cover, to request additional aid from both Kenney and Nimitz. Kenney sent planes of the 432d Fighter Squadron to Tacloban on 2 November, but he refused any assurance of adequate fighter cover until the ground forces provided necessary air facilities. Halsey replied for Nimitz that he was willing

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to "beef up" Kinkaid's surface forces, but he did not wish to risk a fast carrier group in close enough to Leyte to fly combat cover. When the Seventh Fleet erroneously reported enemy surface forces headed toward Leyte on 1 November, however, Halsey dispatched Task Group 38.3 to stand off Leyte where it could be used in case of surface action.[89]

In addition to providing fighters for Leyte, FEAF undertook sustained attacks against the airfields in the central and southern Philippines through which the Japanese were staging their planes from southeast Asia against Leyte.[90] Allied Air Forces struck also against reinforcement air routes: on 28 October, for example, 29 V Bomber Command B-24's loaded with 1,000-pound bombs rushed to Morotai for a third naval strike, and were diverted against Puerto Princesa, Palawan. Over seventy-two tons of bombs demolished the strip, destroyed twenty-three grounded aircraft, and damaged fifteen others; some of the Liberators, meeting neither AA nor interception, strafed the harbor at mast level, destroying three floatplanes. Planes of XIII Bomber Command concentrated on Visayan targets, intensifying their attacks after 29 October, when the Thirteenth Air Force assumed command at Morotai. By mid-November both of its heavy groups were in place at Morotai, within easy range of the Visayas. Fifth Air Force long-range fighters and medium bombers, also flying from Morotai, swept the less-protected enemy airdromes at minimum altitudes. "Snooper" B-24's of the 868th Bombardment Squadron harassed Palawan nightly, weather permitting.[91]

The tonnage of bombs dropped upon the air facilities fringing Leyte soon became impressive. Between 27 October and 26 December Negros received 3,105 tons; Mindanao, 1,277; Cebu, 971; Palawan, 547; Panay, 249; and Masbate, 38.[92] Initial Japanese resistance was vicious. Over Alicante airdrome (Negros) on 1 November, an estimated fifteen Zekes and Tonys shot down four out of fourteen Liberators sent out by the 5th Group, while losing seven of their number; six days later the 5th Group lost three more B-24's to nineteen Zekes, Tonys, and Tojos over Fabrica airdrome, but claimed ten of the interceptors destroyed. In all, during November XIII Bomber Command lost sixteen Liberators to enemy action and claimed twenty-eight interceptors and forty-four grounded aircraft destroyed. The V Bomber Command lost no Liberators to interceptors and only two to hostile AA fire, but it lost ten B-25's to ground fire;

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it claimed four enemy planes destroyed in the air and thirty-five on the ground. FEAF fighters took a heavy toll of aircraft in offensive action over the Visayas. Most successful of such forays was that of 1 November, when forty-two P-38's of the 8th Fighter Group, flying from Morotai, found Bacolod, Carolina, and Alicante dromes jammed with enemy planes. The air cover had evidently been exhausted by earlier Liberator attacks because the P-38's speedily shot down the seven fighters airborne and then destroyed about seventy-five planes on the ground by strafing. AA got three of the Lightnings, but the pilot of one of them survived a crash landing at Leyte.[93]

On the next day came promise of help from Halsey's replenished carriers. He offered to strike Luzon and the Visayas with three groups beginning 5 November, or to pound Leyte with two fast carrier groups. He preferred the first alternative in which MacArthur and Kenney strongly concurred, but they requested him to limit the action to Luzon: Task Groups 38.1, 38.2, and 38.3 struck Luzon on both the 5th and 6th. On 11 November Halsey proposed to move into the western Celebes Sea for a try at Japanese naval units in Brunei Bay, but MacArthur requested that he continue against Luzon. Repeated strikes were flown against the Luzon airfields on 13–14, 19, and 25 November, and at the conclusion of the November strikes, Task Force 38 claimed to have destroyed 245 enemy aircraft in the air and 502 more on the ground.[94]

By mid-November two squadrons of the 494th Bombardment Group (H) had become sufficiently established at Angaur in the Palaus to provide additional assistance against Luzon. Kenney assigned Legaspi airdrome, a field in the Bicol area of southern Luzon which the Japanese were using for staging, as its primary target; the group began missions on 17 November, continuing them at approximately two-day intervals. When weathered out of Legaspi, the 494th bombed nearby Bulan airfield or fields in the Visayas. Its two other squadrons began arriving at Angaur on 22 November, and their crews were added to the Philippines strikes as soon as they were ready for combat. When ground personnel of the Fifth Air Force's 22d Bombardment Group reached Leyte on 15 November, it became evident that the group could not obtain air facilities, and it broke camp on 25 November for a move to Angaur. By 30 November the 22d's air echelon had moved up from Owi, and the group sent a mission against Legaspi. Establishment of the two groups upon Angaur placed them

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within easy range of the Bicol Peninsula, the Visayas, and Mindanao; as soon as fighter cover could be provided, they would be ready to raid enemy air centers at Manila and Clark Field.[95]

On Leyte airfield construction had fallen far behind schedule. During the first forty days of fighting, the rainfall at points reached thirty-five inches, turning the few roads into a bottomless muck and airfield sites into a condition that led General Whitehead to observe: "Mud is still mud no matter how much you push it around with a bulldozer."[96] Since none of the Japanese air facilities could be readied for Allied use by simple repairs, it was necessary for engineers to undertake complete reconstruction to meet American requirements. The peak rainfall and poor drainage compounded with "inordinately high deadline rates" on the shipment of engineer equipment to make construction more difficult than any encountered in the Pacific. Building materials could be obtained only with difficulty; coral for the subgrade at Tacloban had to be pumped from the ocean floor—without any marked success. Roads had to be rebuilt with "profligate expenditure of engineer troops," diverting both materiel and men from airfield work. Movement of the XXIV Corps to Leyte as a matter of priority interrupted and delayed engineer troop shipping schedules, further reducing the number of effective construction troops. Supplies, many of which had been requisitioned for the Talaud Islands and Sarangani, proved inadequate for conditions at Leyte. Some 3,000 Filipino laborers were recruited with difficulty (they did not have to work for their food because of widespread looting of Japanese stocks and were reluctant to work in areas subject to air attack) and performed manual labor with lassitude.[97]

Tacloban, extended to a 6,000-foot steel-matted strip by 9 November, was the least troublesome and most heavily used strip during the critical period. Dulag, located on the flat flood-plain of the Marabang River, required the efforts of three aviation engineer battalions before it could be made dependable for fighters on 19 November. Bayug airdrome was the subject of some controversy between Whitehead, who needed it for operations, and the ASCOM engineers, who urged that unstable subsurface, poor drainage, and the great engineering effort required to build access roads made its development impracticable. It was used, however, as a fair-weather fighter field beginning on 3 November, and by 25 November it had a short steel surface which was extended to 4,500 feet by the end of the year. San Pablo and Buri

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dromes, having been graded and compacted, were used intermittently by fighters, but a variety of difficulties led to their abandonment on 23 and 30 November.[98]

In these circumstances schedules for the forward deployment of air units meant little. The P-40's of the 110th Tactical Reconnaissance Squadron reached Leyte on 3 November, and P-38's of the 431st and 433d Squadrons (475th Group) arrived on the 9th and 14th. P-47's of the 460th Squadron (348th Group) came in on the 10th, covering attacks on an Ormoc convoy en route. The P-47's of the 342d Squadron, however, could not be based on Leyte until 2 December, those of the 341st Squadron until 6 December. Although the November garrison was hardly enough to protect Leyte from continued Japanese air attacks, effective 5 December the P-38's would be expected to cover Allied convoys to Mindoro. Accordingly, Marine Air Group 12 with its F4U's was transferred from Emirau and Green islands to Tacloban, where it was established on 3 December. Because the P-61's of the 421st Night Fighter Squadron did not function well against speedy Japanese raiders, Kenney exchanged this squadron for the 541st Marine Air Squadron, whose F6F's were not fully occupied at Peleliu. The F6F squadron was in place by 4 December. There were as yet no bombers on Leyte, and even the fighters, based for the most part at Tacloban, overstrained available facilities. To make room, many damaged planes were pushed off into the ocean. The P-40's of the 110th Squadron and the P-38's of the 431st Squadron operated from Buri, P-38's of the 432d Squadron flew from Bayug, but by 16 November the Lightnings were miring down at both fields and had to move to overcrowded Tacloban. By 21 November steel matting had been laid at Dulag and all of the 475th Group was based there.[99]

Unfortunately, the enemy air offensive against Leyte showed no dimunition despite Allied strikes upon enemy staging bases in the vicinity, possibly because of increased Japanese attention to dispersal. After 4 November enemy attacks came chiefly at dawn or dusk and during the night. By the latter part of November, guerrillas reported that the Japanese were hiding planes by day in bamboo thickets 500 meters from the runway at La Carlota airdrome on Negros; when the runway there became unserviceable, they began flying from a stretch of highway nearby. Damage by the enemy planes which penetrated fighter and AA defenses was usually severe. On the morning of 4 November, for example, thirty-five Japanese planes made a low-level at-

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tack on Tacloban strip which killed four men, wounded more than thirty others, cratered the runway in four places, destroyed two P-38's, and damaged thirty-nine other planes. Two suicide planes crashed into two transports bringing in the ground echelon of the 345th Bombardment Group, killing 92 men outright and wounding 156, 15 of whom died en route to hospitals. On 24 November twenty-six enemy bombers destroyed two P-38's and an F-5, damaged six other fighters, and sank a Liberty ship off Tacloban. Yet, as November passed the shock effect of the enemy raids upon Allied personnel diminished: "His planes," reported the V Fighter Command historian, "became a familiar and unexciting sight to Allied personnel on the ground, who kibitzed and cheered aerial fighting overhead as they would a football game at home."[100]

The tenacity with which the Japanese fought for control of the skies over Leyte cost them dearly, while, at the same time, Allied fighter losses were low. In all, the Japanese sent more than 1,033 sorties over Leyte between 27 October and 31 December; of this number, V Fighter Command pilots shot down 314 and probably destroyed 45, losing only 16 of their own planes in aerial combat. By 25 December Marine fighter pilots had destroyed forty-two enemy aircraft and probably destroyed two, at a cost of seven F4U's. Sixth Army AA units claimed 250 definites and 110 probables between 20 October and 25 December. For the fighter groups on Leyte, the period was one in which new aces were made and old ones added to their laurels. The 49th Group scored its 500th aerial victory over Tacloban on 29 October. Maj. Richard I. Bong ran his score of Japanese planes destroyed up to thirty-eight, and for his courage in continuing on combat duty when he might have retired honorably from the theater, he was presented the Congressional Medal of Honor by MacArthur at a ceremony on Tacloban strip on 12 December. Following his thirty-ninth and fortieth victories over Mindoro on 15 and 17 December, Bong was sent back to the United States.* Maj. Thomas B. McGuire, Jr., commander of the 431st Fighter Squadron, ran his score up to thirty-one enemy planes, and on single missions Lt. John S. Dunaway, Capt. Robert W. Aschenbrenner, Maj. Gerald R.

* Kenney, feeling that a pilot who had shot down as many as ten enemy planes had much better chances of survival than a newcomer, and at the same time "rather superstitious . . . about attempting to play God" with any man's fate, had long resisted AAF pressure to get the leading American ace out of combat. Bong was killed while testing a jet fighter at Fairbanks, California, on 6 August 1945.

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Johnson, and Maj. William D. Dunham each shot down four Japanese planes.[101]

Meanwhile, the Sixth Army ground offensive had moved promptly enough to attain initial objectives. By 2 November X Corps had advanced up Leyte valley and captured the Carigara Bay area. A cavalry troop had landed on the coast of Samar on 24 October, thereby securing Allied transit of San Juanico Strait. To the southward, XXIV Corps took the Dulag-Burauen-Dagami-Tanauan quadrilateral with its Japanese airfields, and a reconnaissance troop, pressing across the Abuyog-Baybay road, reached the west coast of Leyte on 1 November.[102] Although the Japanese had grossly underestimated the speed of American offensive power, the situation seemed far from hopeless to them. Informed of reinforcements en route, Thirty-fifth Army Headquarters held hopeful discussions of re-entering Tacloban by 16 November and even discussed a plan for demanding surrender of the entire American Army after seizing MacArthur.[103] And it must be admitted that the success which attended their efforts to run in reinforcements gave some ground for this optimism.

Several battalions of the Japanese 102d Infantry Division had been barged to Ormoc from the western Visayas on 23–25 October. In a movement timed to coincide with the naval engagements, the Japanese landed about 2,000 men of the 41st Regiment (30th Infantry Division) at Ormoc on 26 October, although on withdrawal from the bay the light cruiser *Kinu*, a destroyer, and 2 of 4 transports were lost to Allied escort carrier planes, which next day also sank a destroyer picking up survivors. At the end of October, when Halsey's carriers had withdrawn and the Leyte beachhead was under heavy air attack, the Japanese got through with a major reinforcement. The Thirty-fifth Army Headquarters moved from Cebu to Ormoc, where it established a command post north of the city on 2 November. Shortly after 20 October the 1st Division, one of Japan's finest, had sailed from Shanghai in naval transports and four 10,000-ton merchant vessels bound for Manila, where it was reviewed on ship by Yamashita. Escorted by six destroyers, covered by fighters, and sheltered by typhoon weather, the convoy moved down through the Sibuyan Sea and reached Ormoc on 1 November.[104] Unloading was virtually completed before the Allies discovered the convoy. The P-38's of the 7th Squadron sighted it on the afternoon of the 1st, but about twenty Japanese planes were milling around, apparently about to at-

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tack; presuming the ships to be friendly, the P-38 pilots drove off the enemy fighters. Informed of their mistake, 33 pilots of the 7th Squadron flew back early next morning to strafe and drop 500-pound bombs, causing topside casualties and damaging guns and equipment on the decks.[105] The 8th and 9th Squadrons shot down twenty-one covering enemy fighters during the day, and shortly after noon twenty-four Liberators of the 5th Group sank the merchantman *Noto Maru*.[106] On 3 November fifteen pilots of the 9th Squadron, returning from a patrol to Ormoc, sighted and repeatedly strafed a long column of trucks and wagons on the highway between Ormoc and Valencia, burning twenty-five to thirty trucks and killing a number of enemy soldiers moving to the front.[107] Still, the mischief had been done: the 1st Division was ashore with its equipment and approximately 12,000 men. Within 2 weeks after A-day, the Japanese had landed some 22,000 reinforcements at Leyte.[108]

The American X Corps, in possession of the Carigara Bay area on 2 November, now considered two alternatives. It could attack boldly southward toward Ormoc before the Japanese could entrench, a move that might permit the Japanese to land troops in Carigara Bay and cut off the corps, or it could first protect its position in the bay area and then attack. Krueger, unable to secure reinforcements, accepted the latter alternative and limited the attack to application of continuous pressure while the X Corps fortified Carigara Bay sufficiently to withstand amphibious attack. In the XXIV Corps area, Krueger ordered the 96th Division to reduce the 6,000-odd enemy troops holding the hills west of Dagami while the 7th Division continued to consolidate between Abuyog and Baybay.[109] The arrival of Japanese reinforcements had cost the Sixth Army an easy victory, and the Japanese had secured time to bring in still more reinforcements.

The rest of the Japanese 1st Division left Manila on 8 November; they were followed the next day by 10,000 men comprising the main body of the 26th Division, another Manchurian army unit, loaded on 3 cargo vessels which had escaped the B-24's at Ormoc. En route, this convoy was joined by six destroyers and four coastal defense vessels. The voyage was timed to take advantage of a typhoon which passed over Leyte on 8 November, but this time the enemy was not so fortunate as to escape detection by Allied planes. Four 345th Bombardment Group B-25's, at Tacloban as couriers when the con-

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voy was sighted late on the 9th, were loaded with 1,000-pound bombs and sent out with 16 P-38's. Just as the Japanese vessels were rounding the peninsula west of Ormoc, the B-25's came over the hills lying to the north and attacked the cargo ships at mast height, strafing and skip-bombing. One B-25, with its right vertical stabilizer shot off just before reaching the target, made a snap-roll, skidded to the left, made another roll, and righted itself in time to make a skip-bombing run on a destroyer. The plane evidently crashed in flight back to Tacloban. The P-38's strafed and dive-bombed, and P-40's, following from Tacloban, bombed and strafed landing barges beached near Ormoc. None of the vessels was sunk, but loading tackle and deck equipment on each of the three cargo vessels were destroyed: that night the convoy unloaded its men, but the critically essential equipment of the 26th Division could not be landed.[110]

Unable to risk remaining in Ormoc during daylight, the convoy withdrew before dawn on the 10th. At about noon just off the southern tip of Ormoc peninsula, it met thirty B-25's of the 38th Bombardment Group, which attacked at low level, each squadron dividing into two-plane elements against specific vessels. The 822d Squadron, first into the area, lost five of eight planes while the 823d, last over the target, lost two. Of the irreplaceable cargo vessels, the *Takatsu* blew up and sank, the *Kashi* was fired and sank several hours later, and only the *Kinka* returned to Manila. One coast defense ship was beached and burned, and a destroyer limped back to Manila with its bow blown off. Twenty-five 5th Group B-24's, arriving too late to bomb the convoy, were diverted to Japanese headquarters and port installations at Ormoc.[111]

On 11 November another Japanese convoy loaded with 2,000 men of the 26th Division and supplies was attacked by planes of Task Groups 38.1 and 38.3 at the mouth of Ormoc Bay. Four of five cargo vessels were sunk (the one which escaped went aground on the way back to Manila), and four destroyers and a minesweeper—all but one subchaser of the escort—were also destroyed.[112] So far the Japanese had lost 37,271 tons of merchant shipping in the reinforcement convoys, and during the November strikes against Luzon the Third Fleet destroyed nearly 119,000 tons more, most of it at Manila harbor on 13–14 November.[113] Adding the heavy cruiser *Nachi* which had escaped Surigao only to be sunk on 5 November, the light cruiser *Kiso*, and four destroyers sunk on 13 November, the Third Fleet had made

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Manila Bay a haven for Japanese derelicts. For the moment, Halsey had cut off reinforcements to Leyte.[114]

In mid-November the Sixth Army received badly needed reinforcements, at the front and in reserve. The 32d Infantry Division came to the relief of the 24th Division on 14 November, assuming also the mission of the southward attack from Carigara Bay toward Ormoc. The 11th Airborne Division relieved the 7th Division beginning on 20 November; this enabled the latter to work across the narrow road and concentrate at Baybay. On 23 November the 77th Division arrived at Leyte, but, inadequately supplied because of long indecision as to its commitment, it was held as XXIV Corps reserve until it could be made ready for combat. Both opposing armies planned offensives, but they remained stalemated during November.[115]

Japanese offensive plans involved a counterattack at Carigara Bay by the 1st Division, supported by the full strength of the 102d Division to be brought from scattered positions in the Visayas, and the 68th Independent Brigade from Manila. In the main effort—known as the WA operation—the 26th Division, assisted by remnants of the 16th Division and such of the 30th Division as could be transported to Ormoc from northern Mindanao, would penetrate through the mountain trails and attack the Burauen airfields. Simultaneously, airborne troops were to be flown from Luzon and landed in the vicinity of these airfields.[116]

By mid-November, however, Allied air power began to count. Troops of the Japanese 102d Division, originally scheduled to move on naval transports, had to be brought to Palompon by military landing craft and sailboats. Limited to the use of its own landing craft, the 30th Division did not complete movement to Palompon until 10 December. Barge traffic, evading Allied air attacks by night movement, could bring in troops from nearby islands, but movements from Luzon, whether of men or supplies, involved a vulnerable two-day journey over exposed seas.[117] On 24 November 11 P-40's of the 110th Squadron wiped out a small convoy hiding by day in Port Cataingan, Masbate—guerrillas reported that 1,500 enemy troops had been killed. Next day, Third Fleet planes destroyed two of three small transports sheltered at Port Balanacan in Marinduque.[118]

Desperately needed provisions, ammunition, and cannon for the 26th Division were slipped down from Manila under cover of bad weather and into Ormoc on the night of 28 November. Prowling

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American torpedo boats destroyed two of the small escort vessels and a cargo-carrying submarine.[119] An attempt to protect the convoy by dropping some forty-five paratroopers on American airdromes failed completely when AA shot down one of the three transports and the other two crashed near Dulag. Unable to complete unloading during the night, the cargo ships *Shinetsu* and *Shinsho* and a subchaser were sunk by P-40's and P-47's on the 29th.[120] Submarines landed supplies at Ipil on the night of the 30th, but a final effort to get ships through was broken up on the night of 2/3 December by Seventh Fleet destroyers.[121] The Thirty-fifth Army still lacked the margin of supplies required for an offensive.

Nevertheless, the Fourteenth Area Army at Manila ordered execution of the WA operation. According to plan, the Burauen attack would take place on 5 December, with the assistance of the 3d and 4th Raiding Regiments of the Fourth Air Army air-dropped at Tacloban, Dulag, and Burauen. Word of a last-minute postponement of the airborne attack to 6 December failed to reach the 16th Division, which launched its offensive on the 5th. The 26th Division, supposed to advance to Burauen over a native trail which the Manila leaders believed to be a highway, did not get under way until 10 December.[122] Meanwhile, Japanese Topsy transports, flying from Angeles Field on Luzon, had reached Leyte late in the afternoon of 6 December. Two transports, approaching Tacloban with flaps and wheels lowered, were shot down by ground fire; two planes crashed at Dulag, and five paratroopers who managed to jump were speedily killed by the Americans on the ground. Other transports evidently got lost and strewed their men over remote localities. The most successful drop was at the San Pablo strip, where bombing and a smoke screen preceded the jump and 124 parachutes were later counted; at Buri about 80 men seem to have reached the ground. Since both strips had recently been abandoned by the Allied Air Forces,* there was little damage that could be done, although on nearby Bayug the paratroopers succeeded in destroying five L-5's and a C-45. A few 16th Division men seem to have infiltrated and joined the paratroops at Buri, but not until 12 December was the field retaken. San Pablo was cleared on 8 December, and the delayed 26th Division attack on the night of 10 December was repulsed before it could reach the pocket at Buri. The WA operation achieved little more than disruption of

* See above, pp. 373–74.

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Fifth Air Force, and its subordinate command, headquarters: there were numerous skirmishes between headquarters personnel and Japanese snipers, culminated at dusk on 10 December when a party of the enemy fired on Whitehead's quarters.[123] The 26th Division, moreover, had been placed in a position where it would be irretrievably cut off by the Allied encirclement already under way to Ormoc.

Confronted during November with transportation problems greatly complicated by the atrocious weather, Krueger had proposed to move a division through Surigao Strait and Camotes Sea for an amphibious landing near Ormoc. The naval commander had considered the mission too hazardous with the limited air cover available. Moreover, in view of the projected invasion of Mindoro on 5 December, there was insufficient assault shipping. A decision on 30 November to postpone the Mindoro invasion, however, made available the necessary shipping, and Krueger immediately ordered XXIV Corps to commit the 77th Division to a landing at Deposito, about three miles south of Ormoc, on 7 December.[124] Thus, although neither knew the other's plan, the American and Japanese armies had selected almost the same date for their offensives.

The target date for the Allied landing at Ormoc also coincided with the arrival there of a Japanese convoy bearing the 68th Independent Brigade, and both of the opposing air forces were out in strength during the day. The Allied landing was nevertheless accomplished without real difficulty. Task Group 78.3, a small amphibious force screened by twelve destroyers, moved through the Camotes Sea under cover of darkness and arrived off the landing beach at 0600. Between 0702 and 0800 the 77th Division landed against negligible opposition. P-38 fighter cover, sent out by the 49th and 475th Groups, appeared at the first streak of dawn and furnished during the day what Kinkaid called the finest fighter support seen in SWPA. Nearly every ship commander reported that the P-38's pursued Japanese planes through the AA with extraordinary skill and daring.[125] During the day the P-38's laid claim to fifty-three out of seventy-five enemy aircraft attacked. The P-47's of the 460th Squadron, covering attacks on Japanese shipping to the northward, strayed down to Ponson Island, where they shot down two Sallys over an Allied destroyer. On twilight patrol, F6F night fighters shot down a Lily over Ormoc Bay. But some Japanese planes still evaded the defenders, and, for the first time, the Japanese grouped up over designated vessels with as

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many as twelve planes for coordinated suicide attacks. Before nightfall they had sunk the destroyer *Mahan*, a transport, and an LSM, and had damaged several other vessels.[126] "The Navy losses," wrote Admiral Barbey, "would have been greater but for the skill, extraordinary courage and daring of the Combat Air Patrol."[127]

The attempt to unload the enemy's 68th Independent Brigade took place about thirty-five miles north of Ormoc, at San Isidro Bay. The vessels were kept under continuous attacks by eighty-six P-47's, forty-three P-40's, and twenty-four F4U's from early morning until all of the cargo vessels and a high-speed transport were either beached and burned or sunk. Although the main body of the brigade swam ashore, it had lost all but a small part of its equipment. Oddly enough, but still understandable in view of the *kamikaze* philosophy, Japanese planes aboard made little effort to cover their own vessels, and only one of fourteen Allied missions was intercepted: the eight or ten Zekes merely interfered with the accuracy of a VMF-211 strike. The P-47's covering the Allied strikes destroyed one Dinah bomber during the day. Allied fighter losses in both of the air actions on the 7th were one P-38 and three Corsairs; two of the Marine pilots were rescued.[128]

The Japanese tempted providence with one last convoy loaded with the 5th Infantry Regiment of the 8th Division. The cargo ships *Mino* and *Tasmania* were lost on the 11th to Army and Marine fighter attacks, and two destroyers and a transport engaged in this movement blundered into Ormoc Bay on the night of 11/12 December only to suffer one destroyer sunk and the other badly damaged by Allied surface vessels. Artillery fire from 77th Division guns having severely damaged the transport, it was sunk next day by Marine and Army fighters,[129] which also sank the destroyer *Yuzuki* on the 12th.[130] Some troops got ashore at Palompon, but they were the last to arrive from Manila. Japanese fighters attempting convoy cover on the 11th at a cost of thirty-two planes destroyed represented also the last large employment of enemy aircraft against Leyte.

Landing of the 77th Division at Deposito ended whatever hope the Japanese may have had for continuing the WA operation, and the Thirty-fifth Army almost immediately ordered remnants of the 16th and 26th Divisions to withdraw westward. Instead the two divisions simply disintegrated. Although enemy air attacks on resupply shipping initially threatened their operations, the U.S. 7th and 77th Divi-

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sions soon joined forces and expanded to meet the units battling toward them; elements of the 7th met those of the 11th Airborne, which had pushed through the central mountains, on 21 December, the same day that the 77th and 1st Cavalry made contact halfway between Ormoc and Carigara bays. On the 25th a battalion of the 77th Division made an unopposed landing at Palompon, cutting off one more Japanese avenue of ingress and ending the assault phase of the Leyte campaign.[131] When the Sixth Army turned over operations to the Eighth Army on this day, 56,263 Japanese had been killed and 389 captured as against its own casualties of 2,888 killed, 9,858 wounded, and 161 missing.[132] Compressed into a smaller and smaller area in northwest Leyte, the Japanese Thirty-fifth Army evacuated some of its troops to Cebu, but it seems improbable that large numbers of troops managed such an escape. When the Eighth Army ended the Leyte campaign on 8 May 1945, its soldiers had killed an additional 24,294 Japanese and had captured 439; their own casualties came to 432 men killed, 1,852 wounded, and 22 missing.[133]

While Allied air combat losses over Leyte had been limited, losses from all causes in the V Fighter Command (totals reflecting chiefly, but not exclusively, high operational losses and losses on the ground to enemy bombing) were 102 planes in November and 101 in December. Even so, V Fighter Command suffered only nineteen casualties in November and forty in December, largely because of outstanding air-sea rescue performance by Army and Seventh Fleet Catalinas and a high degree of cooperation from guerrilla forces.[134] The 3d Emergency Rescue Squadron, operating a part of its flights from Leyte, picked up 105 men during the 2 months.[135] That the Fifth Air Force managed to remain operational at Leyte is attributable in part to heavy drafts upon the strength of rearward units for support of those forward. The strength of the 8th Fighter Group at Morotai, for example, had been reduced to thirty-eight P-38's by 30 November.[136] Maintenance by harried line crewmen at Leyte was difficult at best, as always in a new area, and persistent enemy air attack made it more difficult. But the chief limitation imposed on air operations at Leyte was the lack of base facilities; FEAF could meet the demand for planes and combat crews, but they could not operate without surfaced strips. By 30 November only 182 fighters were on Leyte, and an average of only 111 had been operational daily during the preceding week. With the Marine planes and 2 squadrons of P-47's added,

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Leyte supported 317 fighters on 14 December, of which an average of 232 had been operational daily for the previous week.[137] Pending the development of fields for heavier planes, there were no bombers.

With the limited number of planes available, the 308th Bombardment Wing was hard pressed to maintain essential defensive operations: it had to keep twenty fighters on continuous air patrols over Allied positions, to be ready to strike at Japanese convoys and to interdict enemy reinforcements. Unavoidably, little effort remained for direct support of the ground troops. This choice of employment not only represented sound doctrine, but, as FEAF later pointed out when a USAFFE ground board protested that ground troops did not "want the crumbs from the table," it was more efficient to kill the enemy and destroy his equipment in convoys approaching Leyte than to expend the same effort less effectively against the enemy ashore.[138]

The first direct support for ground troops came on 26 November, when four P-40's strafed hill positions directly ahead of the 7th Division. Seven P-40's flew another such mission on 2 December, and on 17 December fifteen P-40's bombed and strafed Valencia with results adjudged "wonderful" by the ground troops moving in next day. While twelve P-40's strafed and bombed a hostile position at Matagob on 23 December, fourteen P-40's, bombing and strafing, and five 341st Squadron P-47's, dropping napalm tanks, attacked Palompon in preparation for the amphibious landing there. This attack was the first successful employment by V Fighter Command of napalm, and pilots enthusiastically reported that the section of the town so attacked had been blanketed with fire.[139] Before the end of the year, V Fighter Command had flown more than 360 bombing and strafing sorties against ground targets on Leyte. The bomb tonnage devoted to these targets was not as disproportionate as the ground forces report indicated; during the time that the 308th Wing was in control of operations (27 October–16 December) its fighter-bombers dropped 277 tons against enemy shipping, 80 tons on Visayan airfields, and 262 tons against ground targets.[140] Some of the ground attacks achieved major results, as when twelve P-38's of the 49th Group blew up an ammunition dump in Ormoc on 28 October, an explosion which leveled a block of the waterfront.[141] Japanese commanders later testified to the damage done their road movements by Allied planes.[142]

Could it have been provided in quantity, air transportation of supplies to ground troops on Leyte would have been invaluable. But air-

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field congestion limited the commitment of cargo planes to eight C-47's of the 317th Troop Carrier Group. In the month following the arrival of this detachment the C-47's dropped 221.5 tons of quartermaster items, 70.6 of ordnance, 7.2 of medical supplies, and 1.5 of signal equipment to front-line detachments, with the loss of two aircraft and three crewmen to ground fire.[143] Using a Fifth Air Force rescue plane and six L-5's to supplement his eleven L-4's, Maj. Gen. J. M. Swing, commanding the 11th Airborne Division in its fights through the mountains west of Burauen, claimed to have "supplied the whole division for a month" and to have "learned something that even Hap doesn't know about aerial resupply."[144] The 25th Liaison Squadron dropped an entire 300-bed field hospital, with cots, tents, instruments, and medical personnel, to the division—a feat which the squadron proudly described as "the most audacious, outstanding, and sensational light plane mission in the history of the SWPA."[145]

It was nevertheless true that ground support remained small by comparison with what had become the standard in SWPA. As the Sixth Army report worded it, Leyte operations "brought out very strongly, although in a negative way, the vital relationship of air power to the success of the offensive as measured by the period of time required to complete the utter destruction of the hostile force."[146]

The Disappointments of Leyte

Not only had the inability of Sixth Army engineers to provide planned air facilities on Leyte cost that army an easy victory, but continued constructional delays threatened to jeopardize the whole schedule of future operations. For their failure the engineers themselves were not primarily to blame. The acceleration of the target date had cut down the time for study of the surprisingly meager intelligence that was available on Leyte's terrain and climate. The basic geographical estimate of Leyte, prepared by SWPA's Allied Geographical Section, had described Leyte valley as an area where "air and supply bases can be quickly developed." Its level terrain "would permit . . . passage of troops and of tracked and wheeled vehicles," and a "good road system" would facilitate troop movements. "Cross country movement," it predicted, "would be hindered mainly by the network of streams." The report described Tacloban airfield as of "sandy surface and all-weather" quality, a description which one of the first fighter squadrons to move there called "the supreme over-

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statement of 1944."[147] Basing its observations upon this and other such sources, the Fifth Air Force expected to encounter no more than dispersal problems at Tacloban and to find at Dulag, San Pablo, Bayug, and Buri "good airfields, each with good dispersal."[148]

With the notable exception of one GHQ staff officer who said that he had been at Leyte twice during the rainy season without needing a raincoat, all of the planners had expected heavy rainfall on the east coast of Leyte, but each headquarters had different estimates as to how heavy, and none of them equaled the rainfall actually encountered. At Tacloban, slightly sheltered from the northeast monsoon by Samar, there were 19.13 inches in November, 13.63 in December, and 14.1 in January. At Dulag 35 inches fell during the first 40 days of the operation; for the island as a whole, 21 inches fell during November. Most of the rain came down in short tropical cloudbursts, but passage of three typhoons through the region brought storms of longer duration.[149] While the resulting mud affected both Japanese and American operations, the Japanese were less affected because most of their forces were west of the sheltering Cordillera Central. Ormoc was relatively unaffected by the northeast monsoons which brought rain clouds to the eastern shores of Leyte. During much of the time the spinal mountain range of Leyte was blanketed by heavy clouds, making it necessary for Allied pilots, even in the heat of combat, to conserve enough gasoline to get around or over this weather. Japanese airfields on Cebu and Negros were sheltered and remained much drier than Allied fields around Tacloban and Burauen. Japanese convoys, taking advantage of weather which moves from west to east during the northeast monsoon, were able to use cloud fronts to screen their runs down the Sibuyan passage to Ormoc.

The Sixth Army Planning Group, in a preliminary conference in August, had urged that it would be unwise to attempt the establishment of a major base on Leyte, but, as one of the planners wrote, "the decision to occupy and develop King Two was made before we arrived . . . and, as usual, ours is not to reason why."[150] The engineers nevertheless did their best. As replacement for the unsatisfactory strips at San Pablo and Buri* ASCOM began construction of an entirely new strip paralleling the coast at Tanauan. The site was highly regarded by the engineers because of its good drainage and coral foundations, but a 340-foot hill at the south end of the runway made

* See above, pp. 373–74.

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approach from that direction inadvisable for aircraft. Temporary employment of two extra battalions while they awaited the delayed Mindoro operation hastened work at the strip and Tanauan was usable by 16 December. By early January, its 6,000-foot steel and asphalt runway was completed. Across Leyte Gulf at Guiuan on Samar, naval construction battalions began work early in December and had a 7,000-foot bomber runway ready by early January; completion of a parallel fighter runway required several more months. Of a planned 380 heavy bomber hardstands, only 104 were usable by the end of December, though undispersed parking aprons could accommodate additional planes.[151]

Although the Leyte garrison was perforce limited to fighters and a few troop carriers, the Fifth Air Force, rather than snarl always-delicate shipping schedules, continued to stage ground echelons for the Leyte garrison according to schedule. During November the waterborne echelons of the following units were unceremoniously dumped ashore at Leyte: the 3d, 22d, 43d, 312th, and 345th Bombardment Groups, the 317th Troop Carrier Group, the 6th Photo Reconnaissance Group with its 8th Photo and 20th Combat Mapping Squadrons, and the 17th Tactical Reconnaissance Squadron. In December a part of the 3d Air Commando Group arrived from the U.S. Except for the 8th Photo Squadron, which sent F-5's out of Tacloban to photograph Luzon invasion areas, these units had few or no planes to operate from Leyte before late December.[152] The situation was doubly disadvantageous: airmen set down in an active combat area lacked constructive employment and were subject to unnecessary casualties while their air echelons, serviced only by minimum ground crews at rearward bases, soon suffered from a low rate of combat effectiveness. The single advantage gained was that these units would be ready for the move to Mindoro without additional staging.

Headquarters and service command troops also landed according to schedule. The A plus 30 convoy arrived on 17 November with the rear echelons of Fifth Air Force Headquarters and of its immediately subordinate command headquarters. Unloaded on the beach near Tanauan, they pitched camp until equipment could be hauled overland to a command post to be built around Burauen; there they finally occupied camps on small plateaus which had more of the appearance of "hog-wallows." While headquarters troops attempted to make their living areas habitable, they had to double as infantrymen against Jap-

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anese infiltration, a mission they accomplished with light casualties on both sides. The confusion, combined with continued inability to establish wire communications between Burauen and Tacloban (FM radio sets were finally used), delayed Fifth Air Force assumption of command at Leyte until 16 December, and even then continued difficulty with communications kept the 308th Wing active at Tacloban until late December. Most of FEAF's headquarters had also moved to Leyte on the A plus 30 convoy and established a command post at Tolosa, on the coast of Leyte Gulf between Tanauan and Dulag. GHQ crowded into Tacloban soon after.[153]

Fifth Air Force had gone to Burauen because of the plan to release the Tacloban area to the service command. FEASC was to occupy part of the space there about 15 November and all of it by 20 December, a schedule that had to be kept if planned airborne operations, depending on glider erection at Tacloban, were to be flown against Mindoro and central Luzon. FEASC headquarters having moved from Brisbane to Hollandia during November, an advance echelon of FEASC and V ASAC set up at Palo in Leyte during December, the latter command with direct responsibility for the establishment of Depot 2. The first echelon of that depot, comprising units of the 15th Air Depot Group, had reached Leyte on 19 November. Even then, it had become evident that Leyte could not support airborne operations northward, although discussions continued through November while crates of gliders accumulated near Tacloban. FEASC on its arrival gave attention chiefly to alternatives: it was decided that Depot 3 at Biak should expand by 50 per cent and that the largest air depot in SWPA should be built at Manila as soon as the area could be taken. Meanwhile, the 15th Air Depot Group, aided by the 4th Air Depot Group after January 1945, began limited repair, light aircraft erection, and supply at Tacloban.[154]

Just as Leyte was a disappointment to the commanders in terms of its potential airfields and facilities, so it was a disappointment to the airmen who had long awaited their escape from New Guinea. Here and there they found some marks of western civilization—paved streets, European-type houses, even electricity and running water—but the towns were generally small and unimpressive. The natives were generally clean and cooperative, and most of them were able to carry on intelligent conversations in English. It was pleasant to have houseboys around quarters and laundry services, even if the native

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women did pound garments destructively upon rocks in muddy streams to "clean" them. Barter with the natives produced wooden sandals, mats, knives, and other trinkets for souvenirs, and cockfights, a national Filipino institution, became a fad with American soldiers. But rain which flooded camp areas, storms which blew down tents, mud which defied description, and oppressively humid heat made life generally uncomfortable. Food was poor, monotonous, and served in unappetizing condition. Liver flukes made bathing in streams dangerous, and, despite the rains, water for drinking and bathing was often scarce. Japanese night raids made motion pictures impossible before December, and the Fifth Air Force, alarmed by the paratroop attack,* ordered heavy perimeter guards and basic training after duty hours. Close-order drill in the mud was especially distasteful. Mail service was irregular; as late as May 1945 battered Christmas packages were still arriving. Unrelieved dampness caused many fungus and skin irritations, while human-vectored diseases borne by the natives were severe.[155] Leyte proved to be an island which few of the American troops wished to revisit after they had seen it.

* See above, p. 380.

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CHAPTER 13

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MINDORO

AS SUBSEQUENTLY viewed by General Kenney, the whole Leyte operation was "unsound from the very beginning unless the Jap was definitely on the down grade."[1] The supposition that his power was declining proved to be correct enough, but the experience at Leyte served to emphasize the soundness of SWPA's traditional pattern of attack: the advancement of ground, naval, and land-based air forces in coordinated moves, with new beachheads always kept within the normal fighter-escorted bomb line. Carrier-based air power had again demonstrated that it was a superior striking force when operating independently and an acceptable supporting force when properly integrated with land-based aviation, but that it was no suitable substitute for land-based bombers and fighters in the support of a beachhead. In the further development of SWPA operations, this lesson was not forgotten.[2]

The Revised Pacific Strategy

Having accelerated the target date for Leyte, the JCS had intensified their discussions of the Formosa versus Luzon issue. Despite apparent enthusiasm for an invasion of Formosa, Navy planners had not solved the problem of finding the troops for such a campaign,[3] and a logistical study prepared by the Army Service Forces in August had found Luzon to be a more practical operation than Formosa.[4] Casualty expectations furnished another telling point in favor of Luzon. While SWPA's casualty rates had always been low, estimates based upon POA's experience at Saipan (where American casualties had been 17,000 in overcoming an enemy force estimated at 20,000) indicated that casualties at Formosa might reach a prohibitive figure of

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125,000.[5] The Joint Logistics Committee reported on 26 September that resources were available to undertake the invasion of Luzon by 20 December, but it saw no way to obtain forces for Formosa until three months after a German surrender.[6]

This target date for Luzon had been suggested by MacArthur,[7] and was stipulated in his own revised strategic plan (MUSKETEER III) of 26 September.[8] Tactically similar to its antecedents, the new plan proposed a combined airborne and water movement on 5 December to southwest Mindoro (LOVE III), where air units would be installed to protect convoys in waters west of the main Philippine Islands and to soften the invasion areas on Luzon. If carrier-based air could not insure uninterrupted transit of naval assault shipping through the straits north of Luzon, it might become necessary to land at Aparri (LOVE II) on 20 December, so as to establish air and light naval facilities. This would delay the main landing on Luzon until about 15 February 1945, but it was assumed that the Aparri operation could be dispensed with. Accordingly, two SWPA corps with support from the Pacific Fleet would be prepared to seize a beachhead at Lingayen Gulf (MIKE I) on 20 December 1944. Thereafter, an airborne division dropped in the central plains of Luzon would speed the drive toward Manila. If it became necessary to turn the Japanese flank, one corps would land at Dingalan Bay on the east coast (MIKE II) between 10 and 20 January 1945.

In Washington, discussions of strategy had been joined to proposals for a change in the command of Army forces in the Pacific. MacArthur in August had urged upon OPD representatives that a single commander be designated for all Army forces in the Pacific with authority equal to that of Nimitz, who actually controlled most of the naval resources in the Pacific; General Hull had returned from his visit to the two theaters* convinced that POA leadership for Army troops in the Marianas had not been adequate.[9] On 22 September General Marshall formally proposed a solution to the problem of troop shortages: all Army resources in the Pacific, except those essential for POA defensive and logistical establishments, should be made available to MacArthur, who would undertake the occupation of Luzon on 20 December and would plan to invade Formosa as soon as possible thereafter. All planning for operations subsequent to Luzon, however, should be kept flexible in case invasions of the Ryukyus or

* See above, pp. 284–86.

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even of Kyushu might become advisable instead of Formosa. Nimitz was to furnish necessary naval support to SWPA, and to plan the seizure of positions in the Bonins and Ryukyus with the aid of U.S. Marines.[10] Maj. Gen. L. S. Kuter, AC/AS, Plans, considered the proposal "a great stride forward" and recommended to Arnold full AAF support so long as the status of the Twentieth Air Force was not affected.[11]

Opposition to this plan came from Admiral King, who on 23 September set forth at length his objections to such an arrangement until the Japanese fleet had been destroyed and U.S. naval power was firmly implanted on Formosa and the adjacent China coast.[12] Even then, he felt the over-all command belonged to Nimitz. Though he favored the earliest possible seizure of the northern Philippines, King described MacArthur's estimate of six weeks for the capture of Luzon as optimistic and insisted that it would be impossible to keep the Pacific Fleet off Luzon for that length of time. The Chief of Naval Operations then proposed that Nimitz be directed to support SWPA in a movement northward through the Philippines to Luzon but, on his own, to occupy Formosa-Amoy on 1 February 1945. Two days later, King submitted to the JCS seventeen points of comparison between the Luzon and Formosa operations, most of them to show that the latter was more attractive.[13] On examination of this paper, however, Army Service Forces thought that logistical problems had been slighted; the weight of the argument still favored Luzon.[14]

Nimitz, meanwhile, had begun to discount the necessity for a base on the China coast, influenced apparently by the prospect of a naval base at Leyte Gulf and by Japanese ground victories in China. Turning his eye from the China coast toward Japan, he suggested to his subordinates that Iwo Jima and Okinawa might better serve as immediate objectives for POA.[15] Nimitz evidently persuaded King to accept this view at a conference in San Francisco late in September, for King returned to Washington as sponsor for such a plan. On 2 October, the day of his return, he submitted to the JCS a proposal that CINCPOA, failing to acquire sufficient troops for Formosa, be directed to employ his forces against Iwo Jima on 20 January 1945 and against Okinawa on 1 March 1945. MacArthur, supported by Nimitz in an invasion of Luzon on 20 December 1944, would support POA in the assault on Okinawa. The necessary directive was approved by the JCS on 3 October substantially as King had written it.[16] The ques-

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tion of a unified Army command for the Pacific was dropped, pending maturity of plans for an assault on the Japanese homeland.[17]

Seizure of Southwest Mindoro

From the point of view of both topography and weather Mindoro was well suited as an advanced air base for the movement to Luzon. Lying on the southern flank of Luzon and separated from it by the eight-mile-wide Verde Island passage, Mindoro is roughly oval in shape with a northern prolongation bending to the west. About ninety-five miles long by fifty miles wide, the island ranks seventh in size among the Philippines. It has relatively little steep coast line on the west side despite a mountainous north-south range in the center which provides shelter and causes southwestern Mindoro's dry season to coincide with the northeast monsoon, a season usually lasting from December through May. The southwestern end of the island, with the town of San Jose and its surrounding sugar plantations, is relatively isolated from the rest of the island, but this area offered good local roads and a narrow-gauge railway. The coastal cane fields promised much better terrain for airfields than the rice paddies of Leyte, and Japanese interest in Mindoro had been slight: not more than 1,000 Japanese troops, scattered in small detachments, garrisoned the island.[18]

SWPA issued a final staff study for the operation on 11 October and followed it with formal operations instructions two days later.[19] The Sixth Army was to send the 503d Parachute Regiment from Leyte to seize the area around San Jose in an airborne assault on 5 December (U-day). On U plus 1, the 19th RCT was to land amphibiously and assist in establishing a perimeter defense. About U plus 10 the Eighth Army was to assume control and subsequently to use the Mindoro forces to clear the whole island and threaten southwestern Luzon. Task force engineers were to build a fighter strip by U plus 5 and an additional strip suitable for light bombers by U plus 15; if airdrome potential proved suitable, other fields might be built to accommodate an expanded air garrison. Because of the pressure of the strenuous campaign on Leyte and the many uncertainties shrouding LOVE III, Sixth Army did not issue a definitive field order on Mindoro until 20 November, when the Western Visayan Task Force, commanded by Brig. Gen. W. C. Dunckel, was established and charged with the duties outlined.[20]

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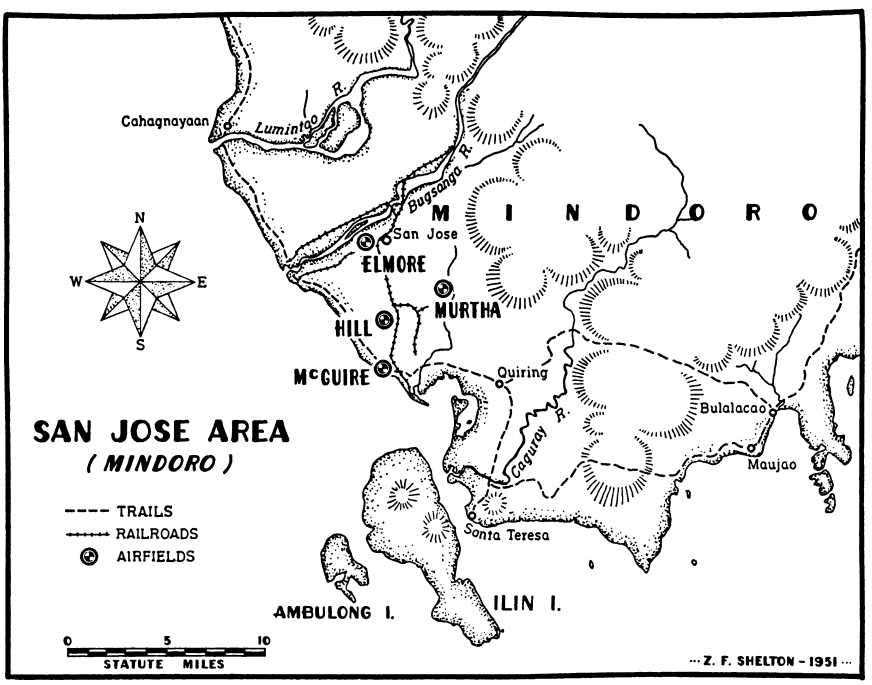
The air assignments fell chiefly to the Fifth Air Force, which was to intensify attacks on western Visayan and Luzon targets after U minus 5 to cover LOVE III convoys. The Thirteenth Air Force in conjunction with the RAAF Command was to assist the Fifth and, as a secondary mission, to continue attacks on Celebes, North Borneo, and Sulu Archipelago and to maintain the blockade of Makassar Strait. Tactical units tentatively specified for the Mindoro garrison were to be controlled there by the 310th Bombardment Wing.[21]



Since it was assumed at first that Leyte airfields would be ready before 5 December to permit sustained FEAF attacks on Luzon for cover of the Mindoro convoys, SWPA had not requested carrier support. But as the target date for Mindoro approached, it became evident that even the most cautious estimates about Leyte airfields had been optimistic. By 16 November it seemed doubtful that heavy bombers could operate from Leyte against Luzon prior to U-day, or that more than two fighter groups would be available for convoy cover from Leyte.[22] Next day, Whitehead took the news to a "very much disappointed" MacArthur, who was nevertheless determined to go through with the operation on 5 December. Leaving Leyte to be

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defended by AA, he planned to use all the fighters for convoy cover; he had already asked Nimitz for Third Fleet strikes against enemy aircraft on Luzon and naval facilities at Manila Bay.[23] Nimitz replied on the 17th that SWPA's adherence to target dates was agreeable, but Third Fleet's need for two weeks' rest prior to strikes in support of Mindoro-Luzon would prevent the use of its carriers as requested.[24] SWPA, however, continued with its planning: the airborne drop was canceled—the 503d Regiment would travel in LCI's, a plan which increased the shipping to be protected from Japanese air attack. To conserve the air cover available, Rear Adm. A. D. Struble decided to combine his U-day and U plus 1 convoys, even though he would have to leave some LST's at Mindoro overnight. The Fifth Air Force continued to refuse a guarantee for neutralization of Luzon unless ASCOM could provide the fields at Leyte.[25]

Contacted as the Third Fleet was nearing the end of its support for Leyte, Halsey proved willing to help against Mindoro and issued radio operations orders on 24 November for neutralization of hostile air forces on Luzon from U minus 1 to U plus 1 and for emergency strikes on U plus 3 and U plus 4.[26] When Japanese suicide crashes on the 25th damaged four of the fast carriers, however, Nimitz at Pearl Harbor was none too pleased with Halsey's commitment. After Halsey assessed his damages, he recommended on 29 November postponement of Lingayen by ten days, and late on the same day Nimitz urged that Mindoro also be delayed. While CINCPAC thought the carriers could "to a degree" neutralize Luzon for a considerable period of time, he argued that the Mindoro operation could be rendered reasonably safe only by land-based aviation.[27] Kinkaid even suggested consideration of a complete cancellation of the Mindoro operation in favor of an island-by-island advance through the Visayas.[28] Faced with these arguments, MacArthur on 30 November postponed the target dates for Mindoro and Lingayen, respectively, to 15 December 1944 and 9 January 1945.[29]

This postponement provided time for Sixth Army's landing on 7 December at Ormoc* and for accompanying air operations. Turning increasingly from the defensive to offensive attacks on hostile Visayan airfields, Leyte's fighter-bombers, assisted by XIII Bomber Command heavies from Morotai, substantially reduced the enemy air strength in the Visayas. Allied estimates of 114 Japanese planes based there

* See above, pp. 381–83.

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on 2 December had been reduced to 58 by 16 December; postwar interrogation of enemy leaders indicated that 30 planes based on Negros comprised the chief striking force in that region.[30] From its rearward bases, V Bomber Command attacked targets on Mindanao and Celebes, while the 22d and 494th Groups flew from Angaur to bomb the Bicol Peninsula.[31] This left the Japanese aircraft on Luzon —estimated at 359 operational planes on 9 December—for the Navy carriers, although B-24's of the 63d Squadron, staging through Tacloban from Angaur, heckled enemy airdromes on Luzon night after night. After perfecting new tactics for handling suicide attacks,* Task Force 38 sortied from Ulithi on 10–11 December and swept Luzon airfields on the 14th, 15th, and 16th. During the three days, carrier pilots claimed destruction of 270 enemy planes and 6 ships, at a cost of 27 U.S. aircraft. So successful were the new tactics that not a single bogey approached closer than twenty miles to the Third Fleet.[32]

There were Japanese planes left, however, and the convoy route to Mindoro remained a perilous one. From early on 13 December, when the convoy entered the Mindanao Sea, until it returned through Surigao on the 17th, it had to move through waters which were within range of numerous Japanese airfields and which were so confined as to limit defensive maneuver. Land areas looming up on radar screens hindered detection of enemy aircraft. The V Fighter Command rested its long-range fighters for several days prior to the embarkation, and the 308th Bombardment Wing, nearing the end of its duties on Leyte, prepared special diagrams and schedules for continuous air cover of the route during daylight hours. F6F night fighters were to furnish dawn and dusk patrols, and carrier aircraft from the CVE's were to augment the air cover. The planners had done their utmost.[33]

The first attack on the convoy came at approximately 1500 hours on the 13th, when a single-engine plane buzzed out suddenly over Siquijor Island and crashed the cruiser *Nashville* amidship, killing 175 men including Col. J. T. Murtha, commander of the 310th Bombardment Wing, and wounding 100. Admiral Struble shifted his flag to a destroyer and sent the cruiser back to Leyte, along with one of the

* Halsey's solution was to reduce the number of bombers and increase the complement of fighters aboard each carrier, to effect channelized return procedures for preventing Japanese planes from trailing carrier planes home, and to inaugurate constant fighter patrols over enemy bases within range of the carriers.

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destroyers crashed during a flurry of dusk attacks that evening. But the enemy's attempts the next day failed. Escort carrier planes claimed thirty-four enemy aircraft, six of them on sweeps to enemy fields judged to lie too close to the track of the convoy. Land-based fighters, ordered to range outside the ships' AA defended area, made no kills.[34]

Having reached waters off Mindoro on the night of 14/15 December, the combat troops began landing at 0730 next morning, the 19th Infantry four miles north of Caminawit Point and the 503d Paratroopers in the vicinity of San Agustin. The few Japanese defenders fled into the hills; during U-day only five Japanese soldiers were killed and two were captured. The chief defensive reaction came in an 0850 attack by some ten to sixteen Japanese planes on the LST's—the men called them "Long Slow Targets." Despite the loss of eight Zekes to P-38 and F4U cover, the attackers destroyed two LST's with the equipment of the 8th Fighter Group and the 418th Night Fighter Squadron aboard them. Except for this, the debarkation was smoothly accomplished. To speed unloading, the Sixth Army had sent along 1,200 men as supernumeraries, and all 25 of the remaining LST's were unloaded during U-day, a record achievement in the SWPA. The supporting group departed on the morning of U-day, the amphibious group was able to retract its ramps in the early evening, and the return voyage to Leyte was accomplished without damage.[35] According to plan, the Third Fleet was to continue its strikes against Luzon to cover establishment of land-based air on Mindoro, but a typhoon materialized suddenly on the 18th and lashed the fleet so severely that it had to withdraw to Ulithi for extensive repairs. The Japanese, who had been taken by surprise at Mindoro, quickly seized the opportunity. After having flown about 100 sorties against the beachhead on U-day and U plus 1 they reinforced their Luzon air units and stepped up attacks so that Mindoro experienced 116 red alerts, during many of which several raids took place.[36]

For the Americans who landed at Mindoro, many of them with the mud of Leyte still on their combat boots, the countryside around San Jose seemed almost idyllic. General Dunckel was favorably impressed with his tactical situation, especially since all installations had been captured intact; within a week he had "a thundering railroad," a waterworks, an electric light plant, an ice and refrigeration plant (the latter not quite ready), and a big lumber industry.[37] Landing immediately behind the infantry, an engineer survey party at 1030

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hours had reached a site selected from aerial photos for the fighter strip (later named Hill Field); there, the RAAF No. 3 Airdrome Construction Squadron and the 1874th Engineer Aviation Battalion began work at midafternoon. Precisely on schedule, 20 December, they completed a 5,750-foot runway and dispersals for the initial fighter group, but Hill Field was extremely dusty and, as expected, would be vulnerable to rainfall. The 866th Engineer Aviation Battalion had made a prompt beginning on another strip (Elmore Field)* located just west of the sugar mill near San Jose, and its 6,000-foot runway was ready for emergency use on 23 December, two days ahead of schedule. Elmore could be used in moderately wet weather, but the two strips (of clay and gravel) were at best temporary.[38]

The 8th Fighter Group—its new model P-38J's and L's serving as escort for C-47's carrying the unit's air echelon—had flown into Hill Field on 20 December. The P-38's of the 36th Squadron assumed the burden of defense at Hill even before they landed, for they were vectored out by ground control against nine Japanese aircraft which threatened the C-47's as they unloaded. The pilots had just flown the route Noemfoor-Palaus-Tacloban-Mindoro, but they shot down six of the Japanese planes, including one new Frank II, which hitherto had not been identified in SWPA. P-61's of the 418th Night Fighter Squadron also reached Hill on the 20th, and P-47's of the 58th Group moved in by squadrons on the 23d, 25th, and 27th.[39]

These Fifth Air Force planes reached Mindoro none too soon. At 0900 hours on 24 December a Japanese naval unit, comprising one heavy cruiser, a light cruiser, and six destroyers, left Cape St. Jacques on a mission to sink Allied transports and shell the beachhead at Mindoro. Thereafter, three of the smaller destroyers were to refuel at Manila, but the rest of the unit would retire to Camranh at top speed before the Allies could bring up their own naval forces. Forewarned by submarine sightings, Dunckel dispersed his supplies inland, and SWPA search patterns were extended to the coasts of Indo-China. Air echelons of the 17th (B-25) and 110th (P-40) Tactical Reconnaissance Squadrons were flown to Elmore and Hill fields on the 23d and 25th, although Elmore was still soft. But at 1600 hours on the

* Hill Field was named for Col. Bruce C. Hill, C/S Western Visayan TF, who was killed aboard the *Nashville*, and Elmore Field for Lt. Col. Howard S. Ellmore, CO of the 417th Bombardment Group, who was killed in action on 2 January 1945. In the latter case, official usage has perpetuated a misspelling of the name, but it has seemed inadvisable to attempt a correction in this text.

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26th, when a PB4Y searchplane reported what it believed to be a battleship, heavy cruiser, and six destroyers 100 miles west of Mindoro speeding toward the Allied position at 28 knots, the force available to the 310th Bombardment Wing was still extremely small for the mission. That the aid of four Allied cruisers and nine destroyers was promised by 1430 hours on the 27th was of little moment. Bomb stocks at Mindoro were not only limited, but for fighters to take bomb loads off the short and rough strips by night was extremely hazardous. Col. Jack A. Wilson, new commander of the 310th Wing, alerted all units, ordering as many planes as possible loaded with available bombs and the rest readied for strafing. Unit commanders, knowing that low-level attacks on destroyers were often fatal, hesitated to order their men on such a mission, but the crews, even though they believed they were going out to strafe a battleship, volunteered without hesitation. There was no time to coordinate an attack, even had the darkness permitted.[40]

At 1940 hours the first wave of planes found the vessels just offshore. Before the wild engagement was over, the full wing strength—thirteen B-25's, forty-four P-38's, twenty-eight P-47's, and twenty P-40's—had attacked every ship at least once. "When I saw a solid sheet of flame," reported one pilot in describing the AA, "I knew I was over the vessel." Each pilot, while wheeling away from the target, flashed on his running lights to avoid collision. Some planes, landing in the Mindoro blackout for rearming, made as many as three strikes against the enemy vessels. Although PT boats, lurking close to shore, fired torpedoes at the silhouetted Japanese targets, only the destroyer *Kiyoshimo* went down, and the fleet persisted toward the beachhead, where at 2240 it fired star shells which began an ineffective forty-minute bombardment. Only one Liberty ship, which had not sought refuge behind Ilin Island as directed, was sunk. Naval gunfire and simultaneous Japanese air attacks caused little damage at Hill, but made it difficult for the airmen aloft to land. With gasoline running short, most of the pilots made as many attacks as possible and then headed through the night and bad weather for Leyte, a flight more dangerous than the Japanese AA had been. When a full count was made, losses during the engagement totaled three B-25's, seven P-38's, ten P-47's, and six P-40's. For the force engaged this was a heavy loss, but it was not in vain, for several Japanese survivors attributed the amazingly poor bombardment by their fleet to the aerial clawing

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which had demolished main batteries and killed a majority of the gun crews.[41] Dunckel thought that without a doubt the airmen had saved the beachhead from serious losses: "The action of our Air Units on that night," he wrote, "will stand forever . . . as one of the most gallant deeds to be established in the traditions of American fighting men."[42]

The continuous Japanese air offensive against Mindoro proved more damaging than this cruiser strike. Between 18 December and 7 January a minimum of 400 enemy sorties were flown into the area.* Perceiving the tenuousness of the Allied sea routes from Leyte, the Japanese wisely concentrated against shipping. The first resupply convoy heading into Mindoro on 22 December lost two LST's to about twenty Oscars and Vals which attacked out of clouds to the stern of the convoy. Five 49th Group P-38's, which the convoy controller had ordered forward of the convoy, managed to splash only one enemy plane. The second resupply convoy was attacked by some 100 enemy planes altogether, both to and from Mindoro, with the loss of 3 merchant ships, 3 LST's, 2 destroyers, and 2 LCM's. Aided by a brilliant moon (one participant called it perfect for a tourist folder but observed that the men afloat would have cheerfully shot it down), the Japanese attacked around the clock, but their most damaging attacks took place on the morning of the 28th when Leyte fields were weathered in and the Mindoro garrison, still exhausted from the fleet attack, had no fighters to send up.[43]

The loss of 2 tankers and the destruction on Christmas evening of the 1,000-barrel storage tank at Hill Field made it doubtful that any planes could long continue to fly from Mindoro. On 30 December Colonel Wilson notified Whitehead that with only 8,500 drums of fuel on hand he was ceasing all air effort except minimum fighter cover; until tankers arrived on the U plus 23 convoy (7 January), he could do no more. Soon the problem of ammunition became equally serious. On the morning of 28 December a Japanese plane had detonated a vessel loaded with bombs for the 310th Wing, and on 4 January another *kamikaze* attack exploded the ship's replacement just off San Jose. All but 300 tons of steel landing mat had been lost on

* Of the attacking planes, Mindoro-based fighters shot down fifty-five definites, and 94th AAA Group fire destroyed forty-eight others. Still other planes were shot down by fighters from Leyte and by ship AA.

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29 December when the vessel from which it was being unloaded was sunk in about 60 feet of water. The 90-mm. AA guns of the task force were down to less than two units of fire by the 28th, and stocks of Air Force technical supplies, personal equipment, and even rations dwindled with each ship sinking. The *kamikaze* pilots, many of whom now wore black funeral robes on their flights, threatened to deny to the Allies all the advantages of Mindoro.[44]

Nevertheless, Fifth Air Force continued to move air units forward as quickly as the engineers could expand facilities at Hill and Elmore. By 9 January nearly all of the planes of the 49th Fighter and 417th Bombardment Groups and of the 82d Tactical Reconnaisance, 547th Night Fighter, 25th Photo, and 3d Emergency Rescue Squadrons were on the island. GHQ had authorized the addition of the 3d Bombardment Group, and its ground echelon had been added to the U plus 15 convoy, although not all of its A-20's could immediately be accommodated on Mindoro. The aggregate strength of the units forward, however, was less than the station list would indicate. Only parts of the air echelons of the 25th, 82d, and 547th Squadrons had reached Mindoro. The 17th Squadron was hamstrung by a crew shortage; on 1 January Whitehead sent FEAF an urgent demand for sixteen complete crews—trained or untrained. As of that date, the 8th Fighter Group was short seventeen P-38's, and a Japanese night raid of 2/3 January destroyed or damaged fifteen more P-38's and seven A-20's. Yet, the garrison was a more powerful one than Kenney had specified for protection of the Lingayen landing: given sufficient fuel and no hard rain, it was strong enough to extend worth-while support to initial ground operations on Luzon.[45]

Preparations for Luzon

Flanked to the east and west by mountain ranges, the central plains of Luzon offered only two logical entrances for a major expeditionary force. From the south, the entrance was through Manila Bay, an area blocked by fortifications on Corregidor, at Cavite, and along the bay shores. At the northern end of the plains was Lingayen Gulf—the "back door to Manila." Once ashore there, Allied forces could drive rapidly against Manila via a well-developed highway network and a north-south railroad, routes vulnerable only where they were bridged across swamps near Plaridel and Calumpit. En route they planned to

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overrun the old American air center around Clark Field–Tarlac–Fort Stotsenburg, a center improved by the Japanese as their own major air base area on the island.[46]

Though geography decided that the major landing would be made at Lingayen, there were other routes for subsidiary and supporting attacks. From Subic Bay on the western coast, a road led through the Sierra Madre Mountains to Pampanga Province; a flanking attack from the Subic Bay–Zambales coast would seal off Bataan peninsula, making it impossible for the Japanese to duplicate the American delaying action of 1942. Southwestern Luzon offered a southern approach to Manila: there were several favorable landing beaches along the coasts, and although the terrain was hilly to mountainous, there were roads and a railroad leading northward. A secondary drive from this direction would permit early seizure of Nichols and Nielson fields —the other major Japanese air center—a few miles southeast of Manila.[47]

In 1941 the Japanese had landed one prong of their offensive at Aparri and had driven southward through the Cagayan Valley and Balete Pass to the central plains. SWPA had been compelled by JCS pressure to plan an operation designed to seize and develop the Japanese airfield at Aparri (LOVE II) in the event convoys were routed through Luzon Straits, but it was recognized that an overland expedition through the Cagayan Valley could easily become bottled up at Balete Pass. Northwest Luzon, lying between the Cordilleras and the sea, offered only a narrow coastal plain, traversed by a highway paralleling the coast and the Japanese airfields at Vigan and Laoag. The southeastern peninsula of Luzon—the Bicol provinces—was mountainous and so isolated from Manila as to be in effect a separate island. SWPA had projected but never seriously considered a preliminary operation (LOVE I) to capture the airfields there near Legaspi.[48]

These several avenues of attack complicated Japanese plans for defense of Luzon, and the Allied landing on Mindoro added further to the enemy's bewilderment. Tokyo's naval staff believed that landings would be made on the southern coasts of Luzon. The Fourth Air Army estimated that the Allies would attempt simultaneous landings at Aparri, Lingayen, and Batangas. General Yamashita looked for initial attacks on the coasts of Lingayen and Batangas, but not until late January or early February. If Japanese commanders later denied

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that they had ever believed rumors planted in the American press that SWPA, delayed at Leyte, would abandon Luzon for Formosa, they badly underestimated the speed with which SWPA forces could launch their attack.[49]

Accepting the loss of Leyte by mid-December, Yamashita had deployed the newly organized Forty-first Army for defense of Manila, the Bicol area, and southwestern Luzon. Early in January, with the 8th Division of this army deployed in the Batangas-Nasugbu area and the 105th Division in the Bicol provinces, the main force of the Fourteenth Area Army, nearly seven divisions, was concentrating in northern Luzon. The 103d Division was at Aparri, the 19th Division at San Fernando (La Union Province), the 58th Brigade was entrenched at Lingayen with the 23d Division en route to its flank, the 10th Division and 55th Brigade were covering San Jose, and the 2d Tank Division was at Cabanatuan, under orders to move to Clark Field. The Fourteenth Area Army had about 90,000 soldiers, while supporting air units totaled about 25,000 men and navy units approximately 20,000. Yamashita's situation was so remarkably immobile, however, that he hoped to fight no more than a costly delaying campaign. Toward this end he began moving supplies out of Manila into redoubts in the hills near Baguio and the mountains east of Manila, but by the end of December only about 10,000 tons had been moved. Some of his troops from Manchuria lacked critical items of supply because of heavy losses at sea; Leyte had drained off other supplies. Because of a fuel shortage, redisposition of combat divisions necessitated marching, an exertion estimated to have cost each unit approximately 30 per cent of its physical battle strength.[50]

Nor was the Japanese Navy in condition to attempt more than hit-and-run strikes against a Luzon invasion. The Allies expected strong interference from submarines and from *hayabusa* boats, the latest agency of suicide attack perfected by the desperate Japanese. These high-speed torpedo boats, armed with a warhead of depth charges, were designed for crash attacks on Allied vessels. Shelters for them had been noted in Subic and Manila bays and along the southeast coast of Batangas; one P/W from a Batangas squadron had identified nine such squadrons on Luzon and claimed that his own unit possessed thirty such boats. The Allied Naval Forces also predicted that Lingayen Gulf, well within range of Formosa bases, would be heavily mined and that Japanese suicide aircraft, as at Mindoro, would con-

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stitute the chief threat to the convoys. Actually, the enemy had conceded that Allied forces could quickly overrun his airfields, and the high command was reluctant to send in more planes. A Japanese naval airman later estimated that, as of 1 January 1945, no more than fifty fighters and twenty bombers were operational on Luzon. But such planes as could be prepared for flying were to be committed exclusively to "special attacks" against Allied transports en route to Luzon.[51]

As for Mindoro, basic SWPA instructions for the invasion at Lingayen had been issued prior to Leyte. On 12 October SWPA had charged the Sixth Army, employing I and XIV Corps, to seize and occupy beachheads in the Lingayen–Damortis–San Fernando area preparatory to an immediate campaign southward to Manila. Sixth Army directed I Corps (6th and 43d Divisions) to land in the Dagupan-Mabilao area with divisions abreast while XIV Corps (37th and 40th Divisions) took responsibility for the right flank. The 25th Division, 13th Armored Group, and 158th RCT were to provide a task force reserve afloat, to be committed between S plus 2 and S plus 4, and the 11th Airborne Division was to be prepared to undertake an airborne landing in the central plains after 1 January. Following establishment of a beachhead, ASCOM was to build a fighter strip by S plus 6 or, if soil conditions required matting, by S plus 10. MacArthur actually wished the strip operational by S plus 8, two days before he had to return the borrowed battleships to Nimitz. By S plus 15 ASCOM was to have operational a second strip built to medium bomber standards, and by S plus 45 the fighter strip was to be similarly expanded. Both strips were to be surfaced for all-weather flying.[52]

Kinkaid, who planned to command in person, organized his fleet units, augmented by seven old battleships and seventeen escort carriers, as the Luzon Attack Force (Task Force 77), the San Fabian Attack Force (Task Force 78) and the Lingayen Attack Force (Task Force 79).[53] Third Fleet would cooperate with its fast carriers. All fast carrier groups, the old battleships, and the borrowed escort carriers would have to be released by SWPA in time to prepare for POA's operation against Iwo Jima.[54]

Coordination of SWPA-POA plans with forces in the Burma-India and China theaters was reached at a conference held in Hollandia

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early in November. In a revision of the basic plan, it was agreed that SWPA air forces would assume responsibility for neutralization of central Luzon from S minus 3 through S minus 1, with Third Fleet aircraft remaining north of a line Santa Cruz–Bagabag–Cape San Ildefonso. Seventh Air Force (494th Group) heavy bombers were to deliver strikes into the Bicol provinces between S minus 15 and S minus 10, their targets being designated by AAFSWPA. The Fourteenth Air Force agreed to attack hostile air and naval targets at Hong Kong. The Twentieth Air Force was to furnish offensive reconnaissance on call after S minus 15, attack the Shinchiku-Taihoku area of Formosa from S minus 3 to S minus 1, and direct all available sorties against harbor and aircraft installations on Formosa between S minus 3 and S plus 4.[55] Kenney's forces had thus assumed the major part of the air mission. In addition to normal preliminary work, the Fifth Air Force was expected to initiate land-based air activity from Lingayen bases at the earliest opportunity, installing maximum strength there by S plus 6 "in order to provide the greatest possible support in the early phases of the ground force operation." By that date, too, it was to be ready to relieve the escort carriers. The whole air garrison, under control of the 308th Bombardment Wing, was to be installed by S plus 15, on a no-dispersal basis if necessary.[56]

As plans were perfected during the next two months, with a postponement of S-day to 9 January 1945, close attention was given to protection of a friendly civilian population: except for clearly defined enemy installations, all targets had to be cleared with GHQ.[57] Final plans for aerial and guerrilla destruction of Japanese communications were jointly devised by GHQ, the Sixth Army, and FEAF. Believing that the Japanese would blow out all bridges as they retreated, the Sixth Army wished all roads blocked south and southeast of Manila, all bridges between Manila and the Pampanga River destroyed, and all wire communications lines sabotaged after S minus 10. GHQ ordered the air forces to interdict the northwestern coastal route (Highway No. 3) at the Claveria, San Esteban, and Tagudin defiles before S minus 3, to cut rail and road routes south of Manila along Laguna de Bay between S minus 5 and S minus 3, to block Balete Pass and destroy the railway bridge east of Calauag between S minus 5 and S minus 1, and to blow out the railroad and road bridges at Plaridel and Calumpit and the road bridge at Baliuag on S minus 4. The Fifth

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Air Force accepted all targets except Claveria, San Esteban, and Tagudin, which, far to the north and out of air range, were reassigned to the guerrillas.[58]

Assuming that V Bomber Command heavies would be in place at Leyte by 1 December, Whitehead had hoped to bring large-scale attacks on the Clark Field airdromes early in the month. But, other than small B-24 night attacks from Tacloban and unescorted Liberator raids into the Bicol provinces from Angaur, heavy bomber missions to Luzon had not been possible. Fighter escort became available on 20 December, and two days later the Angaur-based 22d Bombardment Group sent a twenty-three Liberator mission to Clark Field; on the next day, twenty-two B-24's of the 494th Bombardment Group hit Grace Park airfield in the northern suburbs of Manila. Limited to strikes on alternate days because of the necessity to stage home through crowded Tacloban, the two groups continued their strikes against the six airdromes at Clark Field each day that weather permitted for a total of four more strikes during December. Hostile fighters attempted interceptions in small force, but they were not equal to the 49th, 348th, and 475th Group fighters, which, at a loss of seven planes, shot down ninety-four enemy planes. Bomber crews claimed seven others, but the heavy concentration of guns defending Clark sent many of the B-24's limping back to Tacloban riddled with flak, more than a few bearing wounded crewmen.[59]

Leyte-based planes also intensified their attacks upon Luzon. The fighters had raided Legaspi airdromes early in November, and on the 17th two 460th Squadron P-47's made a sweep of central Luzon, the first land-based U.S. fighters to reappear over Manila, Bataan, and Corregidor. By the end of the year, V Fighter Command planes had completed 50 sweeps, 40 bombing, 28 strafing, and 6 reconnaissance sorties over Luzon, in addition to 443 sorties on escort duty. Leading a 431st Squadron fighter sweep on 26 December, Maj. Thomas B. McGuire, Jr., shot down four Japanese planes to run his score up to thirty-eight enemy aircraft destroyed.* The 110th Tactical Reconnaissance Squadron and Marine Air Group (MAG) 12 combined to add another 184 sorties by the Leyte air garrison, whose strength at the close of the year was augmented by the Corsairs of MAG 14

* On 7 January 1945 Major McGuire crashed during an engagement between four P-38's and a lone Zero over Negros. He was posthumously awarded the Congressional Medal of Honor.

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moving into the new airdrome at Samar.[60] In a movement accelerated by the Japanese fleet raid on Mindoro, B-25's of the 345th Group were ferried to Leyte at a "dizzy pace" on 27 December, and having crowded onto the three operational airfields, they undertook a small mission against shipping off San Fernando that night. The next night four B-25's made low-level attacks over Clark, and on 30 December nine of the group's planes made attacks at Tuguegarao field in the Cagayan Valley. Although believed to be a staging airfield, the airmen found nothing more practicable to attack with their 100-pound bombs than a barracks area.[61]

Up at Mindoro during the last week of December, the 310th Wing, despite its almost exhausted store of aviation gasoline, was attempting to blockade the Luzon coast from Vigan to Batangas. Special resupply by sea scheduled to arrive on 4 January with drum and bulk gasoline promised that the garrison might be able to fulfill its commitments during the critical period of support for MIKE I; until resupplied, Wilson felt compelled to cancel all but defensive operations after the 30th.* Whitehead, however, promised aerial delivery and held him to a full offensive. The C-46's of the 2d Combat Cargo Group, flying directly from Morotai, and C-47's of the 317th Troop Carrier Group, operating from Leyte, delivered approximately 600 drums of gasoline each day between 3 and 10 January. The Navy's service group, bound for Lingayen, pumped off 10,000 barrels on 5 January to put the garrison out of danger. During the first week of January the CRTC sent needed B-25 replacement crews to the 17th Reconnaissance Squadron, and Whitehead drew P-38's from Leyte units to replace 310th Wing losses from night raids.[62]

Thus strengthened, the 310th Wing continued the coastal blockade. On 30 December, less than a day after its A-20's reached Mindoro, the 675th Squadron teamed up with the 17th and 110th Tactical Reconnaissance Squadrons against an enemy supply convoy off northwest Luzon, sinking a frigate and three cargo vessels to gross more than 20,000 tons. On 2 January the 417th Group's A-20's sank another frigate and four smaller cargo ships at San Fernando. This successful mission cost the life of Lt. Col. Howard S. Ellmore, commander of the group since July, when his A-20 collided with the superstructure of a vessel, cartwheeled into the sea, and exploded. When the Japanese stopped efforts to bring ocean-going ships into

* See above, p. 400.

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Lingayen Gulf, the Mindoro garrison added its efforts to the attack against communications. Fifteen reconnaissance fighters, carrying 500-pound bombs under each wing, were partly successful in starting landslides in Balete Pass on 4 January. By 7 January the two bridges at Calumpit had been destroyed, and on 9 January dive-bombing F4U's from Leyte completed demolition of the dual-purpose rail and road bridge at Plaridel. The Cabanatuan rail yards were attacked by A-20's on 8 January and reported destroyed. Railroads and rolling stock, roads and vehicles, and bridges were attacked throughout central and southern Luzon in a campaign which would be intensified as the Allies went ashore at Lingayen.[63]

So far, however, FEAF did not have enough strength within range to neutralize Japanese air power on Luzon. Either the 22d or the 494th Group continued to hit Clark daily, failing only on 1 January when the 494th was turned to an alternate target and on the 5th when neither group could fly because of weather. Against the 22d Group, raiding Mabalacat strip on the 2d, the Japanese attempted their last interception, only to lose thirteen planes to Allied fighters; but next day, as if to prove the target no "milk run," Japanese AA shot down a 494th Group plane. Snoopers set fires on the airfields almost nightly, and on the 3d, four 58th Group P-47's from Mindoro swept one of the Clark strips. Two of the fighters were quickly shot down (one piloted by the group commander, Col. Gwen G. Atkinson, who was rescued by guerrillas), but the other two strafed and burned eleven parked enemy planes. Medium bombers of the 345th Group attacked the Porac and Floridablanca strips on the 4th. Although the Japanese later paid tribute to the effectiveness of the heavy bomber attacks, they were not up to FEAF standards. Limited by the necessity of staging through Tacloban, only one heavy group at best could get over Clark each day. The XIII Bomber Command's two heavy groups at Morotai could not reach Clark, nor could the 90th Group which was flying with skeleton echelons from Biak. Except for night flights by its 63d Squadron and filler crews rotated to Angaur, the 43d Group at Leyte, having no base facilities, was out of action. Some 100 enemy AA batteries at Clark, mustering 74 heavy, 237 medium, and 174 light guns, promised to make it a suicidal target for massed medium and light bomber attacks.[64]

Already Seventh Fleet units had begun to leave Leyte for Lingayen

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Gulf. The minesweepers, leaving first on 2 January, sustained damage to four vessels from air attack. The bombardment group (Task Group 77.2), which left Leyte on 3 January with an escort of twelve CVE's, lost a CVE off the west coast of Panay on the 4th. On the next afternoon, as the vessels were passing Subic Bay, between fifty and sixty enemy planes penetrated the fighter cover to damage two cruisers, two CVE's, and three destroyers. As the minesweepers and fire support ships deployed in Lingayen Gulf on the morning of the 6th, they exposed themselves to *kamikaze* planes which, despite vigilant fighter cover from the CVE's, damaged sixteen vessels during the day. Land masses blocked radar warning apparatus and denied fighter cover the advantage of early warning;[65] only vigorous air attack against the source of the raiders held promise of stopping the enemy before the transports reached Lingayen.

Task Force 38, still organized in three groups, had sortied from Ulithi on 30 December, gaining tactical surprise on 3 January in strikes against Formosa and the southern Ryukyus. But the advantages of surprise were largely canceled by weather conditions which prevented attacks in force on the 3d and forced suspension of all strikes next day shortly before noon. Carrier pilots nevertheless claimed 111 Japanese planes destroyed. The fleet refueled on the 5th preparatory to strikes on the next day against north Luzon fields for cover of minesweeping at Lingayen. MacArthur had asked Halsey to include the Clark airdromes in his missions of the 6th, to attack before and after the 0900–1500 period reserved for FEAF. Instead, Halsey decided to maintain continuous air patrol over Luzon from dawn to sunset, with his pilots briefed on the risks arising from the presence of FEAF and CVE planes. On the 6th a solid overcast blocked out all efforts to cover northern Luzon, but Task Force 38 planes ranged southward to Manila Bay and shot down eight of eighteen enemy planes seen airborne and destroyed nineteen more on the ground.[66] FEAF put twenty-two B-24's of the 22d Group over Clark shortly after 1035 hours and sent forty-four Liberators of the 5th and 307th Groups from Morotai to cover dispersals at Nichols and Nielson with 120-pound frag clusters.[67]

Neither Halsey's "rolling blanket" nor FEAF's heavy bomber attacks checked the savage assault on the Allied vessels in Lingayen Gulf. Alarmed by a situation which threatened to require reconsid-

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eration of plans, Kinkaid asked Halsey for strikes on the 7th directed especially against airfields, large or small, in the Lingayen area. He also suggested that Halsey consider moving the Third Fleet west of Luzon to provide cover when the transports arrived. Halsey, who had planned to hit Formosa on the 7th, instead concentrated persistent attacks against enemy fields in northern Luzon, and, with favorable weather, he also blanketed the whole island: his pilots claimed destruction of seventy-five planes on the ground.[68] Wisely, he refused to attempt cover for the transports.

Third Fleet's efforts on 7 January were supplemented by the largest coordinated mission of light and medium bombers ever employed in the SWPA. In view of the heavy concentration of enemy AA about Clark Field the plan of attack was especially daring: forty B-25's of the 345th Group and twenty A-20's of the 312th Group were to execute a low-level strafing and parafrag attack over the airdromes, flying from northwest to southeast in a sixty-plane front; they were to be followed immediately by sixty A-20's of the 312th and 417th Groups flying abreast from northeast to southwest. Two squadrons of Mindoro-based P-38's would cover the bombers. Early in the morning the 345th and 312th Groups (the latter flying its first combat mission from Tanauan strip) launched their planes at Leyte and flew to Mindoro where the wing was joined by A-20's of the 417th Group in the take-off for Luzon. Beginning at 1025 hours the attack was executed nearly as planned, although low-hanging clouds hindered assembly so that some of the planes were still jockeying for position as they flew over the airfields. Each A-20 squadron had sent out 12 planes, and in all 132 bombers, roughly divided in 2 equal waves, went over the targets, strafing and training out 7,836 x 23-pound parafrags at anything that looked worth while. Japanese defenses were taken by surprise—some guns still had their covers on them—but a B-25 and an A-20 were shot down and three other A-20's were lost when the ground seemed to blow up in front of them. Flak intelligence officers later found the explanation in a number of partially buried 50-kilogram bombs wired for detonation from nearby machine-gun positions. As the B-25's came on the target, 6 or 7 Hamp fighters maneuvered over them at about 1,000 feet, but the aerial bombs they dropped did no damage, unless to the Japanese ground defenses. All told, it was a highly successful mission.[69] On the same day, farther south, the 494th Group raided Grace Park airfield, where guerrillas

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had reported some hidden planes, and the 5th and 307th Groups repeated their strikes on Nichols and Nielson.[70]

"Commencing with 7 January," Kinkaid summarized in his fleet report, "the enemy attacks diminished sharply in intensity."[71] But the admiral, ignoring the low-level AAF strike against Clark in a rare moment of ungenerosity, implied that the Third Fleet had accomplished the good work. This was probably because of the prevailing naval opinion, shared by Halsey, that the suicide planes were flying from northern Luzon; in postwar interrogations, however, Japanese airmen insisted that the attacks had originated at Clark Field.[72] The suicide planes had flown circuitous routes to avoid U.S. fighter patrols, and thus left the impression that the attacks came from northern Luzon.

Post-mortem investigations undertaken at Clark, Nichols, and Nielson after their capture revealed an achievement far beyond any that had been anticipated. From the beginning of Allied air attacks in October, 1,505 Japanese aircraft had been put out of action on the ground, chiefly by air attacks. Many of the planes, however, lacked only a few parts to be ready for flight, and others showed that they had been inoperational for want of simple repairs prior to their destruction. P/W reports and captured records told of a speedy disintegration of the Japanese air services. At Clark the heavy bomber attacks beginning in December had caused utter confusion, out of which developed a hastily conceived and poorly directed effort at dispersal: repair shops, dumps, and maintenance units were scattered from Clark to Bamban. Over 200 new engines, most of them uncrated, were hidden in Mabalacat village, never more than 3 or 4 in the same place; parts were hidden inaccessibly or even buried (a George, for example, was found lacking only 1 of the carburetors buried at Mabalacat to be ready for flight).[73] The Japanese air services on Luzon had reached a state of almost complete paralysis even before the landings on Lingayen.

In view of the great difficulty with which a limited heavy bomber effort had been maintained, FEAF leaders found cause for special gratification in Japanese comparisons of the relative effectiveness of carrier and land-based attack. A senior staff officer of the Fourth Air Army and three naval air officers testified:

> The Navy air raids in December and early January caused only a little damage. They came and went away. . . . These attacks did not disrupt our operations.

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Disruption of our air operations was caused by the heavy land-based bombers. They gave us no rest and we were unable to recover between attacks. . . . It was impossible to maintain or repair the damage before they struck again.[74]

Only sporadic *kamikaze* attacks continued after 7 January. The largest of the Allied convoys, a force extending more than forty miles from van to rear as it sortied from Leyte on the evening of 4 January, was not attacked until the evening of the 7th when the two Japanese planes were shot down by fleet fire. Next morning six attacking planes badly damaged an escort carrier and hit the superstructure of an attack transport, but otherwise the convoy was unhurt. Another large convoy, which included the fleet flagship *Wasatch* with Kinkaid and Krueger aboard, went free of attack for two days after departing Leyte, when on 8 January a single suicide plane seriously damaged another CVE. That was all, except for a few suicide attacks which managed to sink two isolated minesweepers shortly before the landings on the 9th.[75]

There it soon became evident little other resistance would be offered. Naval bombardment uncovered few defenses along the gulf, underwater demolition teams found neither off-shore obstacles nor beach positions, and minesweepers met only a few floating mines. The Japanese obviously had no idea of defending Luzon on the beachhead.

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CHAPTER 14

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LUZON

IN QUIET seas and under drifting clouds of the sort that had afforded Allied convoys so little protection from enemy aircraft on the way up from Leyte, the assault troops for the Luzon invasion headed toward the Lingayen beaches at 0930 on 9 January 1945. Preceded by a heavy naval bombardment, both Army corps established their lodgments without difficulty. *Kamikaze* attacks against the screening force damaged four ships, but CVE aircraft shot down a total of seventeen enemy planes. By the close of the day, the escort carrier planes also claimed to have destroyed seven light tanks and eighteen trucks in their zone of operations (an area bounded by Hermana Mayor Island, Camiling, Bagabag, and Santa Cruz). Planes of the 345th and 417th Groups, circling over Camiling village in case they were needed, were dismissed forty-five minutes after H-hour and departed on communication strikes. One squadron of A-20's, however, was called in later during the day to bomb and strafe Villasis and Rosales villages.[1]

Sporadic Japanese air attacks against the American forces at Lingayen Gulf continued until 18 January, but after the 12th most of them apparently came from Formosa. If reinforcement aircraft reached Luzon, they were few in number and counted for little. Although Fifth Air Force crews experienced slight interference from enemy air while supporting the Luzon campaign and had no difficulty in overcoming such resistance as they met, none could equal the record established by Capt. William A. Shomo, commander of the 82d Reconnaissance Squadron, and Lt. Paul M. Lipscomb of the same organization. Flying an armed photo mission to Aparri on 11 January, they met twelve enemy fighters led by a Betty bomber headed southward down the Cagayan Valley. The Japanese evidently identified the F-6's as friendly Tonys, for Shomo with little difficulty promptly

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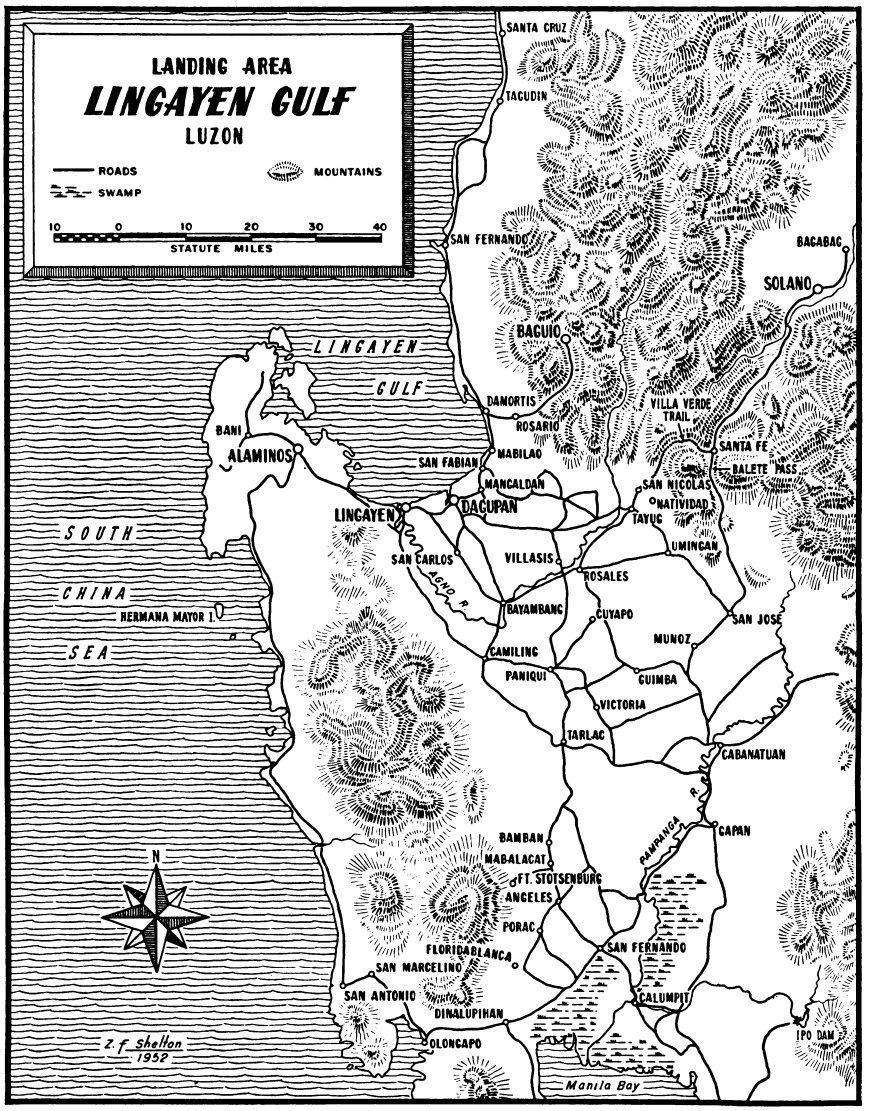
shot down the lead bomber and six fighters while Lipscomb dispatched three fighters. Shomo's destruction of seven combat planes in fifteen minutes surpassed any previous achievement in SWPA.[2]



Within a few days virtually no enemy air organization was left on Luzon. Vice Adm. Shigeru Fukudome, commander of the Second Air Fleet, fled to Singapore by flying boat on the 15th, and his fleet was

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soon disbanded. Vice Adm. Takajiro Onishi took about thirty fighters of his First Air Fleet to Aparri and soon retreated to Formosa. Lt. Gen. Kyoji Tominga organized remnants of his ill-fated Fourth Air Army as the *Kenbu* composite division on about 8 January and took to the hills for infantry duty; Count Terauchi had already taken his Southern Army Headquarters to Saigon on about 10 December. Thus, Yamashita had to fight a campaign on Luzon without friendly air power.[3]

Meanwhile, other Allied forces had combined to eliminate the possible risk of serious interference from outside Luzon. The Fourteenth Air Force had been limited in the reconnaissance it could provide by the loss of its base at Liuchow,* but XX Bomber Command, which was maintaining surveillance of Kyushu, sent B-29's on reconnaissance as far south as Singapore after reports of hostile fleet movements around Camranh Bay. Arnold did not consider airfields to be lucrative targets for the B-29's, but in the heat of the moment MacArthur insisted that assistance against Formosa and Okinawa airfields between S-day and S plus 8 was essential if he was to weather the critical period at Lingayen. Accordingly, XX Bomber Command sent fifty-five B-29's against Kagi airfield and Heito arsenal on 14 January and seventy-seven B-29's against Shinchiku airfield on the 17th.[4]

Having fueled on the 8th, Halsey had struck Formosa on S-day and, aided by overcast skies, slipped the Third Fleet through the hazardous Luzon Strait that night. After a run southward and another fueling, he attacked the coast of French Indo-China on the 12th, but failed to locate any sign of the enemy fleet, which some of the American naval leaders, recalling Leyte, had feared might attempt an attack at this critical juncture. Returning northward, Halsey swept Formosa on the 15th, Hainan, Hong Kong, and Canton on the 16th. After losing three days fueling amidst high seas, he ran out again through Luzon Strait on the night of 20/21 January. He repeated strikes against Formosa on the 21st, taking the only damages of the entire operation when the carrier *Ticonderoga* was extensively damaged by enemy dive bombers.[5] Next day, the Third Fleet moved northward to photograph the Ryukyus, while the Fifth Air Force began a series of strikes against Formosa which would continue until the Japanese surrender.†

* See above, p. 259.
† See below, pp. 471–89.

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Back on Luzon, Fifth Air Force planes were simultaneously isolating the more immediate battleground. On 9 January alone they knocked out fifteen key bridges on Luzon, and from their Mindoro and Leyte bases they continued to press attacks on enemy communications. By the 16th the Fifth Air Force, totaling up minimum claims, reported that it had destroyed 43 locomotives, 291 railway cars, 369 motor trucks, and 42 staff cars in the central plains; 3 locomotives, 42 railway cars, 31 trucks, and 12 staff cars in the Batangas area; and 33 locomotives, 133 railway cars, 68 trucks, and 12 staff cars in the Bicol provinces. This was equal to half of Luzon's prewar locomotives and a quarter of her prewar rolling stock. In addition to this, eighteen tanks, five armored cars, and ten field pieces on the move had been strafed and bombed, despite elaborate Japanese camouflage. The Balete Pass road, cratered on the 4th and 21st, was blocked with 2,000-pound bomb landslides on the 22d.[6] In fact, Fifth Air Force pilots, delighted with the novelty of "rhubarbs," were doing almost too good a job: on the 19th, for example, in an effort to preserve some Japanese facilities for American use, Krueger asked that bridges be bombed only on request and that bombing and strafing of railway equipment be limited to trains in motion.[7]

By the end of the first week after the landing Sixth Army had established a firm beachhead. With I Corps encountering stubborn resistance in the foothills bordering the left flank, XIV Corps, despite logistical problems, forged down the plains, reached and bridged the Agno River by 16 January, and thus carved out a beachhead almost thirty miles deep and thirty miles wide.[8] Air support had been provided by escort carrier planes of Task Group 77.4, which flew forty-one joint air-ground missions during the week. Because of the rapid advance of the ground troops, the carrier operational zone was twice extended. In addition, strikes were flown on request by 310th Wing aircraft from Mindoro, an operation which placed both Army and Navy planes within the same vicinity. With the air command thus divided, the risk was great, but only one mishap occurred: Navy planes attacked eight P-47's on the 10th near Munoz, southwest of San Jose and outside the carrier aircraft zone. In spite of friendly gestures and refusal of the P-37's to take offensive positions, the CVE pilots shot down one Army plane and holed two others, explaining later that they took the P-47's for Tojos.[9]

Fortunately, the engineers kept to schedule in the construction of

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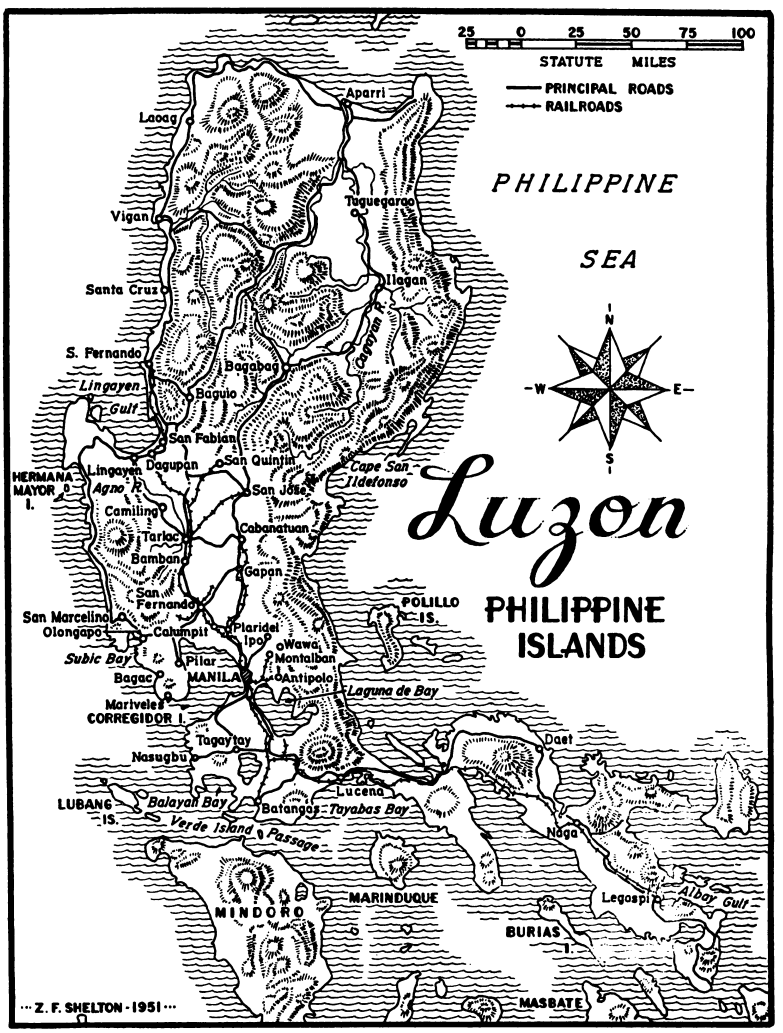
an airstrip in the beachhead. The heavy seas which followed hard upon the original landing threatened to frustrate ASCOM's effort to meet the completion date of S plus 8; to get the landing mat and other heavy equipment ashore, it had been necessary to shift all unloading



to the more sheltered San Fabian beaches. Although the engineers were consequently unable to begin work on the old Japanese strip near the Lingayen beaches until S plus 3, most of three battalions concentrated on the effort, and ASCOM had the strip ready on S plus 7 —three days before the battleships were due for return to Nimitz. To

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accomplish this, the engineers used simplified construction: shell craters were filled with beach sand and the surface bladed smooth; palm fronds and bamboo mats were placed over the exposed sand to check erosion; 5,000 feet of steel mat were laid and the entire surface sprayed with tar. No drainage was possible, and it was known that the airstrip would deteriorate rapidly once the summer rains came.[10]

Troop carrier C-47's began to ferry cargo into the Lingayen strip on 16 January, and that same day several P-61's of the 547th Night Fighter Squadron moved in from Mindoro. Next afternoon, P-38's of the 18th Fighter Group and P-40's and P-51's of the 82d Reconnaissance Squadron arrived to bring the FEAF garrison up to requirements for cover and direct support, and at 1830 hours on 17 January the 308th Bombardment Wing formally relieved the escort carriers. The 110th Reconnaissance Squadron reached Lingayen on the 22d, followed next day by the first F-51's of the 26th Photo Squadron.[11] Work on a medium bomber field had started near Dagupan on 13 January, but after two aviation engineer battalions had worked six days, a more favorable site near Mangaldan was substituted. With the assistance of an extra aviation engineer battalion, they had the field sufficiently developed by 22 January to receive the 35th Fighter and 3d Air Commando Groups. This strip had a surface of compacted earth, treated with oil as a dust palliative; rains prevented movement of MAG 24, MAG 32, and the 38th Bombardment Group (M) there until 2–3 February. At Whitehead's request, SWPA authorized extension of one of the runways to accommodate PB4Y searchplanes, but as the engineers had predicted, it would not support operations by heavy planes. Medium bombers so crowded the field, moreover, that the 312th Bombardment Group (L) was substituted for the 345th Bombardment Group (M) on 12 February.[12]

The Capture of Manila

Because it lacked details of the enemy situation, the Sixth Army had been unable to project in advance a comprehensive strategy for the whole Luzon campaign, but in the week following S-day it became clear that Yamashita was waiting for the Sixth Army to overextend before counterattacking on its left flank. Dispositions of hostile armor at Cabanatuan seemed also to indicate a second counterattack farther southward in the plains, although postwar historical accounts prepared by the Japanese indicate that this was not a part of Yamashita's

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plan. Alerted by Allied minesweepers in the gulf, on 6 January he ordered his 23d Division and the 58th Brigade into the foothills on the north side of the intended Allied beachhead with instructions to prepare for an attack from that direction. On 15 January, four days after the landing, he drew in the 2d Tank Division to Tayug, where it would be in position to cooperate with the 10th Division in an assault on the Americans as they moved against San Jose.[13]

MacArthur's decision on 17 January to move XIV Corps southward toward Clark as rapidly as possible, with I Corps in echelon to the left rear, involved a calculated risk—the kind of gamble that Krueger had rejected during the early days at Leyte when invited to drive southward from Carigara Bay toward Ormoc. The reserve forces (the 32d Infantry Division, 1st Cavalry Division, and 112th Cavalry RCT) that might be required to repel an attack on Krueger's flank could not be expected at Lingayen until 27 January.[14] But there was now one important difference: at Leyte there had been no effective air support; at Lingayen on 17 January the 308th Wing took over from the CVE's with sufficient strength to offset the risk assumed. The wing's strength increased as the ground troops advanced until by early February it commanded a still growing force of 380 planes—fighters, dive bombers, light bombers, and medium bombers. Moreover, the 310th Wing at Mindoro possessed an equivalent garrison which could be called upon as required in Lingayen. Support aircraft parties (SAP) accompanied each separate regiment, division, and corps, as well as army headquarters, to facilitate the cooperation desired. Already Fifth Air Force planes from Mindoro and Leyte had effectively checked enemy movement along the roads during daylight hours, and, as a Japanese tank commander later explained, cross-country movement in an area covered with rice paddies was impossible even with ample gasoline, which the Japanese did not possess.[15]

Krueger had issued the necessary orders on 18 January, and XIV Corps pushed southward against only ragged opposition. The 40th Division captured Tarlac on the 21st while the 37th Division pivoted slightly to the east to capture Victoria for left flank protection. On the 21st Krueger ordered an advance into the Clark Field area. The first real opposition was encountered on the 23d, when elements of the 40th Division discovered strong enemy positions in the hills to the west and southwest of Bamban, obviously designed to deny use of Highway No. 3—the easy route to Clark. After securing Bamban

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on the 25th, the division turned against the enemy entrenchments. In bitter fighting against Japanese cave positions, bristling with machine guns taken from wrecked planes at Clark and with AA units drawn from the same area, it secured the high ground west of Bamban on the 26th. Meantime, the 37th Division had driven toward the eastern side of Clark Field, reaching a point just north of Angeles without serious opposition on the evening of the 26th. Now in the advance, that division secured Angeles, and although slowed by mine fields, it captured Clark and entered Fort Stotsenburg on 28 January. Elements of the division then moved south along the highway to San Fernando (Pampanga Province) and dispatched patrols southeast to Calumpit.[16]

Although in its progress XIV Corps found little need for close air support, demands for reconnaissance and photography were exceptionally heavy until the enemy situation cleared. At Krueger's request and with his assurance that all civilians had been evacuated, the Fifth Air Force sent 494th Group Liberators against Bamban town on 18 January. Next day, Whitehead committed both the 22d and 494th Groups to Bamban and adjacent hill fortifications, but weather forced cancellation of these strikes and of scheduled light and medium bomber attacks against Tarlac. Bamban stores and fortifications were attacked by the 22d Group on the 20th. On the 21st, shortly after the heavies were airborne, Fifth Air Force was notified that Bamban lay within a newly established bomb line; fortunately, the bombing caused no damage to American troops. Thenceforth, the Fifth Air Force requested a 24-hour advance notice of all such changes. The 345th Group's Mitchells attempted a strike against Tarlac on the 20th but weather once more frustrated it; clearing weather on the 23d, however, permitted thirty-six A-20's of the 312th Group and eighteen B-25's of the 345th to bomb and strafe all enemy activity around San Jose, San Nicolas, and Floridablanca towns in one prolonged sweep. Because he desired to protect the Filipinos, MacArthur had ordered on the 9th that bombing and strafing be limited to trucks on the main roads (but not side streets) through towns, villages, and barrios; on the 20th, upon representation from the Sixth Army, he allowed bombing of towns without approval from GHQ, but only in direct support of ground operations.[17]

Well-prepared Japanese defenses on the I Corps front quickly persuaded division commanders to forward air requests, and nearly all

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of the fifty-six close support missions flown between 17 and 28 January were directed to this sector. Air action on 22 January against an augmented enemy battalion, dug in with tanks, mortars, machine guns, and artillery in the Cabaruan Hills, proved especially noteworthy. Although surrounded by the 1st and 20th Infantry Regiments, this battalion was causing numerous casualties; shortly after noon a forward observer of the 11th SAP directed twenty-three A-20's of the 672d Squadron on two bombing and four strafing runs across the position. A Japanese prisoner later declared that 25 per cent of his company, including the company commander, had been killed; he estimated casualties to be comparable or higher in other companies and reported complete demoralization among survivors. After a second strike by nine SBD's on 25 January, the ground troops cleared out the remnants within two days.[18] Maj. Gen. Edwin D. Patrick informed the support party that he had not believed it possible for air and infantry to work so closely together.[19] Other air strikes attacked enemy fortifications on the high ground north of the Rosario-Damortis road, where hardly a single ground unit attacked without preliminary air bombardment. Eight 110th Squadron P-40's (as an added precaution against Japanese transients at nearby Cabanatuan) covered the homeward route of 6th Ranger Battalion scouts who, after a daring infiltration from Guimba to Pangatian, on 30 January had rescued 512 Allied prisoners of war from a concentration camp.[20]

Sixth Army reinforcements had reached Lingayen on 27 January as scheduled. The 1st Cavalry Division, reinforced by the 112th RCT, was promptly routed to Guimba, while the 32d Division passed to control of I Corps. With the 1st Cavalry completing its concentration early in February at Guimba, whence it could attack southward to Cabanatuan and then by Highway 5 toward Manila, and with the 43d Division poised to cross the Pampanga at Calumpit, the Sixth Army was ready to begin the drive to capture the capital of the Philippines.[21] Seeking a quick victory, MacArthur had directed preparations for a number of supporting invasions. Two of these operations —coded MIKE VI and MIKE VII and employed in the reverse order —would now be executed.

Since the original plans for Luzon contemplated little more than the tactical employment of air power, Kenney and Whitehead had spoken for an exploitation operation which would give them heavy bombardment bases as far northward as possible. MacArthur gave his

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verbal approval and SWPA had cut orders on 21 December for execution of an operation (MIKE III) designed to seize the area around Vigan on 26 January, a target date soon postponed by three days.[22] The development of a heavy bomber base at Vigan, however, threatened diversion of engineers from projects viewed by Krueger as more urgent, and after the landings at Lingayen the enemy situation convinced MacArthur that MIKE III was not immediately practicable. On the morning of 12 January he suddenly ordered his planners to prepare a study for use of the same forces in a landing near San Antonio on the Zambales coast of west-central Luzon (MIKE VII). The expedition was to seize San Marcelino airfield and the town of Olongapo, clear Subic Bay, and march eastward to cover the entrance to Bataan. Two days later, operations instructions set the target date for 29 January (B-day), ordered the Eighth Army to stage and initiate the operation, and committed XI Corps with its 24th Infantry Division and one RCT. AAFSWPA was to provide support, assist the CVE convoy cover, and install the 348th Fighter Group, one flight of the 421st Night Fighter Squadron, and one flight of the 3d Emergency Rescue Squadron (all under the 309th Bombardment Wing) as quickly as possible. Engineers from XI Corps were to prepare a fair-weather fighter strip at San Marcelino by B plus 5 and complete the air facilities by B plus 15.[23] Convoy and local cover, as well as local air support, could easily be flown from Mindoro. Indeed, FEAF had seriously questioned whether an air garrison would be needed but decided that it would be worth while to base a few units at San Marcelino, whence they could move inland to Clark Field as soon as it was repaired.[24]

Planning staffs had long been considering a number of possible amphibious and airborne invasions south of Manila, but earlier studies were superseded on 5 December by MIKE VI. According to this plan, the Eighth Army, employing a reinforced 11th Airborne Division, was to seize two beachheads in the Nasugbu-Pagbilao coastal sector of Tayabas Province on 30 January (X-day), conduct overland and overwater movements to contain the enemy, and, if all went well, move against Manila. The 511th Parachute Infantry Regiment was to be concentrated at San Jose in Mindoro for air movement as the task force reserve. AAFSWPA was directed to destroy hostile air and surface forces at the beachhead, deny hostile movement in Cavite, Batangas, and Tayabas provinces, provide convoy cover and direct

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air support, and prepare to drop the 511th Regiment. Because of the closeness of the target area to Mindoro, no airfields were to be built; other than two air warning detachments and two SAP's, no air force troops were to accompany the expedition. As in MIKE VII, AAFSWPA delegated the air mission to the Fifth Air Force, and directed the Thirteenth Air Force and RAAF Command to support it as requested.[25]

To supervise the new operations at closer range the Fifth Air Force moved its headquarters and those of its closely associated commands from the mud of Leyte to the dust of Mindoro, relieving the 310th Bombardment Wing at midnight on 29 January. At the same time, the Fifth Air Force relinquished control at Leyte to the XIII Fighter Command, which had just moved northward from Sansapor to serve as an advanced echelon of the Thirteenth Air Force. Since operation of troop carrier planes from Hill and Elmore fields would circumscribe offensive strikes from those bases, the Fifth Air Force planned to move the 317th Troop Carrier Group's C-47's there on 31 January for as short a stay as possible.[26]

Along the Bataan-Zambales coast in the MIKE VII target area no considerable troop concentrations were evident, but Eighth Army and Seventh Fleet were apprehensive about the old American defenses on Grande Island at the mouth of Subic Bay. Interpretation of photographs taken on 10 January revealed heavy activity at Warwick battery, which had been the heaviest U.S. fortification. Between 21 and 28 January Fifth Air Force bombers and fighters accordingly dropped 175 tons of bombs upon the small island in a series of uneventful missions. Medium and light bombers as well as fighters attacked Olongapo town and swept Bataan looking for what proved to be exceedingly sparse military targets. Save for sporadic ground fire there was no opposition. Several flights, finding no targets, bombed Corregidor as a last resort, and some even returned their bombs to base.[27]

According to plan, Fifth Air Force fighters covered the B-day convoy, but neither they nor the planes from six CVE's encountered any hostile aircraft. Lacking air and naval targets, the CVE planes finally conducted "hunter-killer" antisubmarine operations off Manila Bay, where an underwater craft damaged an Allied transport on the 30th. The A-20's of the 3d Bombardment Group had been alerted at San Jose, but when no call came through for their services they attacked

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other Luzon objectives. Without opposition, Struble's task force began landing XI Corps at 0830 hours, 29 January, without the formality of a bombardment. Once ashore, the assault troops found San Marcelino strip in the hands of friendly guerrillas, and the few Japanese at Olongapo withdrew without an effort to destroy the old American naval shops. Subic town and Olongapo were captured by the close of B-day, and reconnaissance troops were moving rapidly south from Castillejos pass, four miles north of Subic Bay, without any difficulty. Grande Island was taken on 30 January, and Navy minesweepers immediately began clearing Subic Bay for port use. Leaving a small force in the rear, XI Corps drove along Highway No. 7 to meet elements of XIV Corps moving west on the same road. By 31 January the two forces were only about 10,000 yards apart after having encountered heavy enemy opposition in Zig-Zag pass, just west of Dinalupihan.[28]

At dusk on 30 January the Fifth Air Force had assumed full responsibility for close support and cover at San Antonio, thus relieving the last of Nimitz' escort carriers from their long tour of duty in the SWPA. The old American airfield at San Marcelino proved "a natural for dry weather strips"; with a clay and gravel topping the strip was opened on 4 February. Transports carrying air echelons of the tactical garrison arrived that day, and within the next several days all of the air units specified for San Marcelino had reached their new station. Construction having proved so easy, MacArthur ordered the task force to build additional dry-weather hardstands to accommodate the 345th Bombardment Group, and after a hurried but efficiently accomplished movement from Lingayen, this group's B-25's began operations from San Marcelino on 15 February.[29] With the establishment of air units in western Luzon, the 309th Bombardment Wing, commanded by Col. Norman D. Sillin since 16 December 1944, was ready not only to support ground fighting on Luzon but to reach far out into the South China Sea against enemy shipping.

In view of Japanese concentrations in Manila and in southwest Luzon, MIKE VI involved a serious risk for the 11th Airborne Division. Its pack artillery would be inadequate, but the Eighth Army was unwilling to provide much additional firepower for an operation which it considered "nothing more or less than a reconnaissance in force." At Kinkaid's suggestion, X-day was postponed to 31 January so that a cruiser force from San Antonio could be on hand to offer fire sup-

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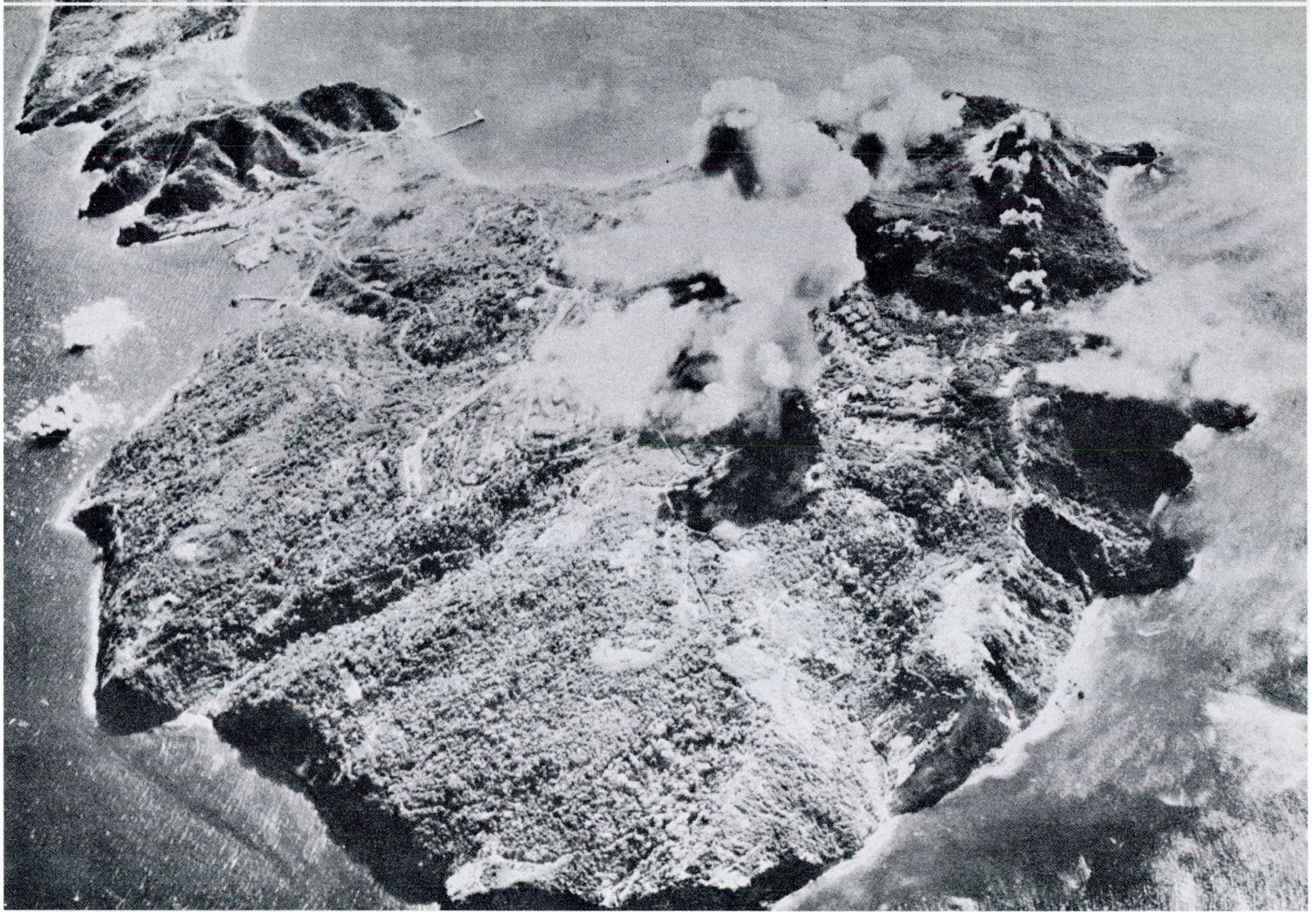

BOMBING CORREGIDOR

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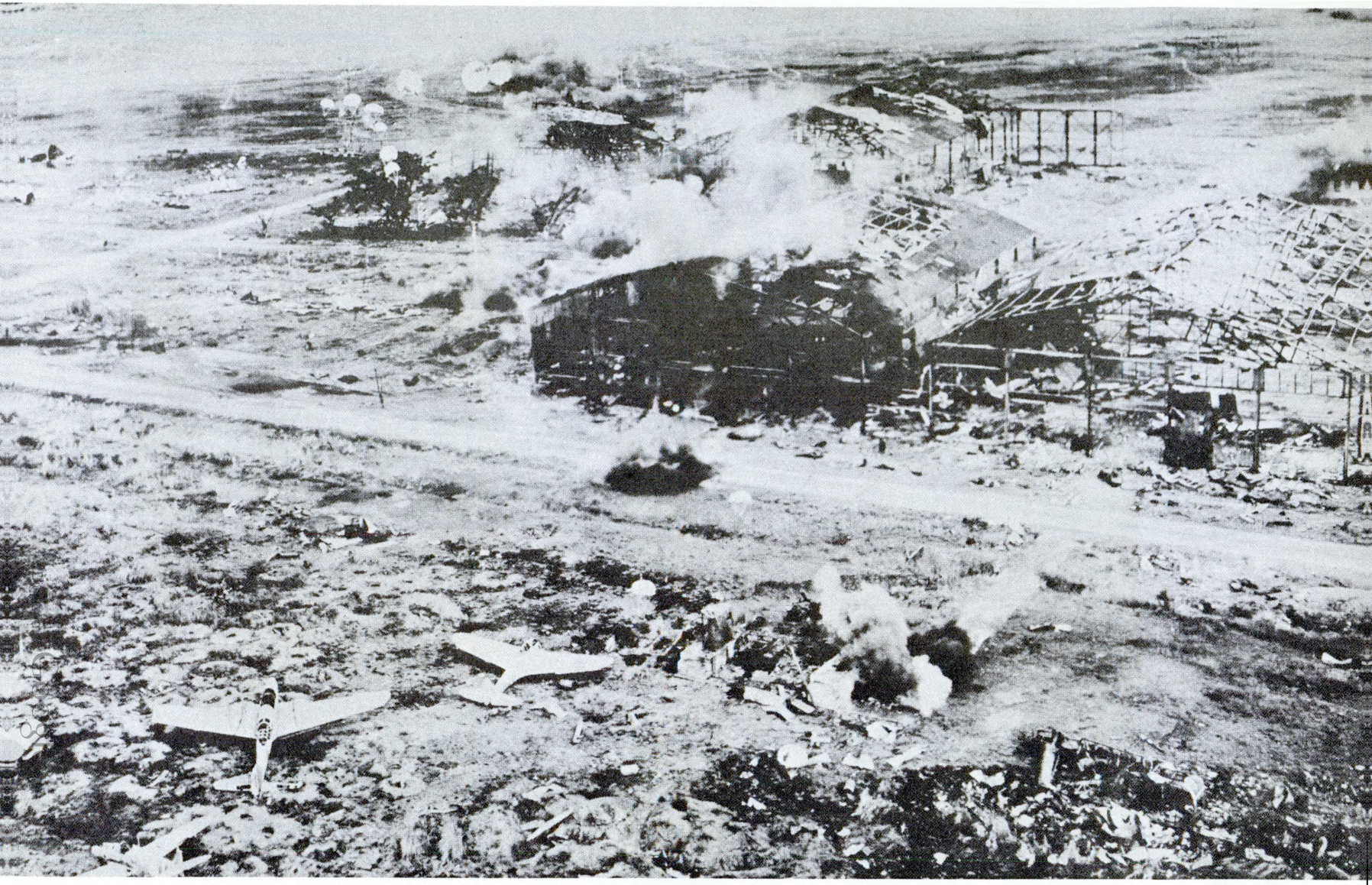

RETURN TO CLARK FIELD

port with its naval rifles, but these vessels would be vulnerable to the *hayabusa* boats believed lurking in Balayan Bay. Vigorous air reconnaissance, strong air activity to isolate the beachhead and destroy suicide boats, a successful reinforcing paratroop drop, virtually continuous air strikes to augment the divisional artillery, and not a little trickery would be necessary if MIKE VI were to succeed.[30]

Following GHQ orders of 16 January, Fifth Air Force fighter and photo sweeps maintained surveillance of roads southward from Manila to detect troop movements, and of the mouths of the Balayan, Batangas, and Tayabas bays to locate suicide boats. Results were reported daily to GHQ and the Eighth Army. Actually, however, little movement was observed. At the request of the Eighth Army, A-20's and B-25's, cooperating with Allied PT boats to neutralize the *hayabusa* threat, searched and bombed villages along the coasts of the bays, concentrating particularly on Santiago, where guerrillas reported suicide boats hidden under houses along the waterfront. Fighters dropped napalm, its first use against Luzon, upon a reported hideout at Cape Santiago on 22 January. Beginning a series of eleven raids against Cavite on 24 January, the 5th and 307th Groups of XIII Bomber Command pulverized this former American naval yard lest its rehabilitated fortifications and garrison forces flank the route of advance toward Manila. After its strike on 3 February, the Thirteenth Air Force pronounced targets on Cavite Island and Cañacao Peninsula to be 96 per cent destroyed. Allied naval planners, who hoped to repossess the base, were reported to wince with each successful strike report.[31]

To confuse the Japanese defenses in southwest Luzon, a Seventh Fleet task group of LCI's, PT's, and beach-jumpers simulated an attempt to land around Unisan in eastern Tayabas Bay on the night of 22/23 January, while troop carriers dropped dummy paratroopers in a zone east of Lake Taal in Batangas Province. Enemy radars, which the air forces had left unmolested, were reported frantically active. Another such diversion, without paradummy drop, was executed in the same area on the night of 30/31 January. Admiral Fechteler's task force moved in close to the beaches at Nasugbu during the early morning hours of 31 January under cover of the latter diversion. Hampered only by poor landing beaches, the 188th RCT went ashore to feel out the opposition, and when nothing serious materialized, Maj. Gen. Joseph M. Swing sent in the remainder of his air-

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borne division. An umbrella of four to eight P-47's and P-38's, each loaded with bombs in case the ground controller called on them, covered the beachhead while 3d Group A-20's circled in the vicinity. During the day P-47's dropped sixteen bombs on buildings at Aga near Manila, and other planes bombed the Batangas strip lest some of the derelicts were still serviceable.[32] As the Japanese later told the story, the landing at Nasugbu had found them unprepared in an area out of reach of their better Batangas defenses. All that they could do immediately was to send out a scratch force of about thirty suicide boats on the night of X-day, an attack which destroyed only one American subchaser.[33]

The operation remained a reconnaissance in force, however, until the 11th Airborne could advance far enough inland so that a drop of the 511th Regiment might secure commanding terrain at Tagaytay; Eichelberger was unwilling to employ the airborne regiment more than one day's march ahead of the division. Fortunately, Swing had all the air support he could use, including a constant column cover of at least four fighter-bombers. Fifth Air Force and Eighth Army operations officers had studied photographs of Route 17, the road leading inland toward Manila, and had carefully plotted enemy defenses along the way. After these defenses had been speedily eradicated by fighter-bombers and A-20's, the division was able to advance rapidly in column with no danger to its flanks. Eichelberger, who accompanied the column, radioed MacArthur that A-20 support was "grand," and that the advance would have been faster had the column not been moving up-hill all the way. Passing the remains of Aga at noon on 2 February, the division was within striking distance of Tagaytay Ridge.[34]

Back in Mindoro, the Fifth Air Force was ready to drop the 511th Regiment in three waves, two on the 3d and one on the 4th. Contrary to instructions published by the 54th Troop Carrier Wing and the 11th Airborne Division during mutual training in New Guinea, no radio or other signal was to be used to coordinate jumping. The leader of each flight would jump as the flight reached a "go line," and pilots of following planes would flash their green signal lights as the men on the lead plane jumped. On the morning of 3 February, A-20's of the 3d and 417th Groups attacked the old Japanese fields at Lipa and Kalingatan, while forty-eight C-47 transports of the 317th

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CLOSE SUPPORT IN LUZON

Above: Air Liaison Officer in L-5 Marking Target *Below:* P-38 Bombing Ahead of Ground Troops

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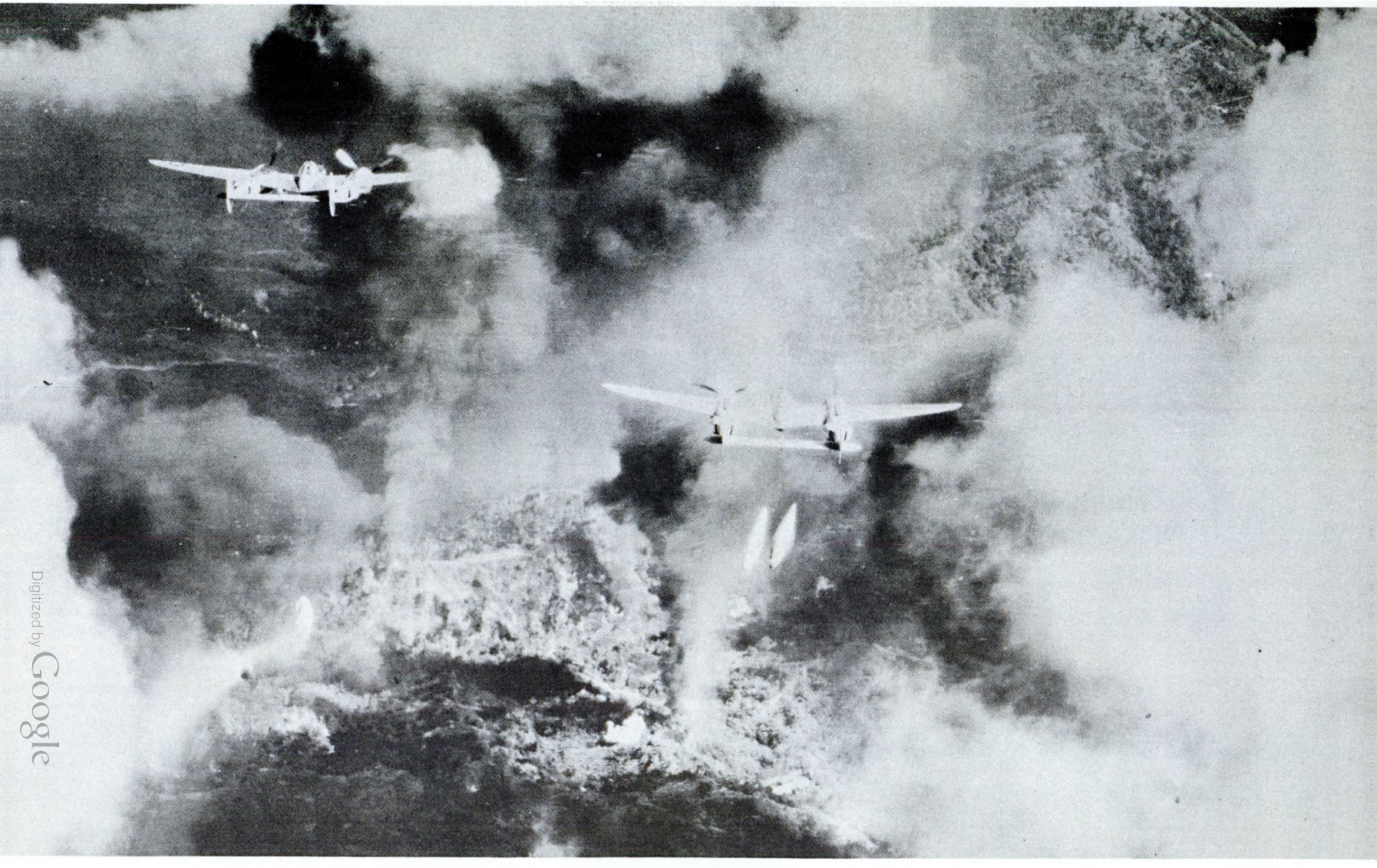

P-38'S DROPPING NAPALM BOMBS NEAR IPO DAM

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Group took off at Mindoro and joined their P-38 escort. Flying a circuitous route to avoid known AA emplacements, the C-47's reached the drop zone at 0820, and the first eighteen planes of the formation placed their paratroops precisely on the area marked with smoke-pots by advanced ground scouts. One of the lead planes in a following flight, however, accidentally released a parabundle, and immediately the tense paratroopers bailed out of each successive plane, landing about six miles short of the drop area. During the interval between the return of the transports and 1100 hours, when the second wave took off, the paratroopers awaiting movement were expressly briefed to ignore scattered parachutes on the ground short of the proper zone. But again, despite verbal orders and red signal lights, most of the paratroopers jumped short of the drop zone. On the next morning the last jump landed in the proper area. All told, only 38.4 per cent of the 2,055 men had landed where they should have; only slight injuries to 36 paratroopers represented the total cost of the drop, however, and the scattered jump actually facilitated seizure of its objectives. Within three hours after the last jump, the seven-mile Tagaytay Ridge and the critical road junction where the ridge road, Highway 25, joined the route to Manila had been seized. By nightfall of 4 February the 11th Airborne was at Silang, only twenty miles south of Cavite.[35]

Now that the division was in position to drive toward Manila, the risk came not so much from the threat of Japanese resistance as from a lack of supplies. Unfavorable landing beaches at Nasugbu and an overhasty withdrawal of amphibious vessels had left Swing short of essential resupply. As early as the morning of the 3d he had only 1,500 gallons of motor fuel—less than a day's supply. He had already cleared an airstrip near Nasugbu, and Eichelberger appealed personally to Whitehead for immediate delivery of enough gasoline to tide the division over until naval resupply arrived. The radio reached Mindoro at about noon. All troop carriers there were committed to the final jump of the 511th Regiment, but Whitehead intercepted another squadron hauling between Mindoro and Leyte and sent them to Nasugbu late that afternoon. Rain had so softened the runway that only the first plane succeeded in landing, but next day 10 C-47's successfully delivered 89 drums (4,895 gallons) of gasoline and picked up wounded soldiers. A priority request for ten complete tank tracks

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followed. Before normal resupply began, the troop carriers had made twenty-seven emergency trips to Nasugbu as well as fulfilling a commitment for resupply of the paratroopers through the three days following the final drop.[36]

As the 11th Airborne Division stood poised for its drive to Manila, Sixth Army was approaching the northern outskirts of the city. With the high ground east of Lingayen secure, I Corps, with the 32d Division in the line, had wheeled its 25th and 6th Divisions eastward to drive the Japanese back into the Caraballo Mountains, thus to end any danger of a flank movement into the central plains. Fighting on this front was sharp, especially at Munoz, where the Japanese opposed with a suicide tank company, infantry, and artillery, all strongly entrenched. After failing to capture the town, the 6th Division bypassed it and moved on against San Jose, while the 25th Division, as the northern arm of a pincer movement, moved on Lupao. The 32d Division drove out toward the entrance of the Villa Verde trail to clear the enemy from the Natividad–San Nicolas–Tayug triangle, enemy tanks reported in the area having been destroyed by Allied air attack or withdrawn. On the XIV Corps front, the 40th Division drove the *Kenbu* force back into the foothills of the Zambales Mountains.[37]

With enemy forces contained, Krueger ordered XIV Corps to attack Manila from the north. The 1st Cavalry, covered by a constant Marine fighter force which permitted attack in column, moved out from Guimba, crossed the Pampanga at Cabanatuan, and drove rapidly down Highway 5. Having covered almost 100 miles in less than 3 days, the cavalry reached Grace Park in northeastern Manila on the evening of 3 February. During the next two days the division forced a stoutly resisting enemy back to the Pasig River, but it failed to force a crossing. The 37th Division's progress from Calumpit was retarded by many wrecked bridges, but it reached the Pasig in force on the evening of the 5th. Completely surprised by the rapidity of this attack, the *Shimbu* force (Forty-first Army and attached naval troops) was unable to rally an effective defense in the northern outskirts of Manila. Having progressed northward without real difficulty, the 11th Airborne Division on the 5th entered the southern suburbs of Manila near Nichols Field.[38] There would be another month of bitter fighting, during which Manila—once called the "Pearl of the Orient"—would be reduced to semi-rubble and 16,625 Japanese would be rooted

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out and slain, but MacArthur announced on 5 February that the assault phase of the Luzon campaign had been completed.[39]

With the 308th and 309th Bombardment Wings approaching full strength and with units at Mindoro and Leyte available for support, the Fifth Air Force had supported the ground campaign to the fullest. Where there was Japanese resistance, there the Fifth's aircraft concentrated in such numbers that only a generalized description of their operations is possible. Japanese fortifications at Umingan which held up the advance of the 25th Division were attacked on 1 February by successive waves of SBD's and P-47's carrying 500- and 1,000-pound bombs, and by a wave of B-25's which strafed and dropped parafrags on Japanese troops driven out of doors by the dive bombers. Eight tons of bombs smothered Japanese resistance on this one day. Enemy fortifications in the Zambales foothills were heavily attacked as were fortifications on the northern flank of I Corps. Using large quantities of napalm, the 309th Bombardment Wing literally burned the Japanese out of Zig-Zag pass in 5 days of fighter-bomber attacks on 7–11 February, while 31 transport missions dropped the ground forces 78.5 tons of supply and equipment. During the attack of the 1st Cavalry, forward air controllers mounted in jeeps directed strikes of nine covering SBD's, which rotated every two hours from dawn to dusk against targets likely to hold up the column. Air strikes against pinpointed artillery and mortar positions around Nichols Field (MacArthur would not permit strafing and bombing within city limits) greatly assisted the lightly armed 11th Airborne.[40]

Meanwhile, attack bombers had continued operations designed to isolate Luzon. On 31 January twelve B-25's of the 822d Squadron flew from Lingayen to intercept a run of three destroyers from north Luzon to Formosa: within fifteen miles of Formosa the B-25's sank the *Ume* and damaged the other two destroyers. Four 41st Squadron P-47's, escorting the Mitchells, shot down two Zekes and an Oscar.[41] Thus the air forces were everywhere active as Sixth Army troops drove on Manila.

"Of the many Pacific tactical air operations," the JCS observed at Potsdam, "we think the most striking example of the effective use of tactical air power, in cooperation with ground troops and the Navy, to achieve decisive results at a minimum cost in lives and materiel was the work of the Far East Air Forces in the Lingayen–Central Luzon campaign."[42]

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Consolidation

After the capture of Manila, Yamashita retained the main body of the Fourteenth Area Army (*Shobu* force) in the northern Luzon mountains. The *Kenbu* force, driven into the Zambales Mountains, continued to threaten Clark Field and Stotsenburg. Most of the *Shimbu* force had managed to escape Manila into partly completed mountain defenses around Laguna de Bay, and other elements held islands in Manila Bay or were attempting to escape into mountainous Bataan. Defensive troops in the Bicol provinces were virtually intact. Reduction of these pockets would take time, and MacArthur's immediate purpose was to contain and weaken the enemy while the Sixth Army secured the portion of Luzon needed for an Allied base. On 5 February he ordered Krueger: 1) to clear Bataan and Manila Bay in order to gain prompt use of the port; 2) to clear southern Luzon westward of Laguna de Bay and the Bicol peninsula prior to opening Batangas Bay; 3) to clear the northwestern coasts of Luzon above Lingayen for airfield development; 4) to drive into the mountains and contain or destroy hostile forces north and east of the central plains and Laguna de Bay; and 5) to prepare for future operations in the Cagayan Valley.[43]

As the American forces undertook to clear the port of Manila, remnants of Japanese units sought safety across the bay on Bataan and at Corregidor. Heavy barge traffic, noted by fighters on 11 February, was vigorously strafed by 348th Group planes during the following four days, with claims of 2,000 enemy soldiers killed. But other small craft managed the short trip at night.[44] Ordering the 1st RCT of the 6th Division moved to Dinalupihan, Krueger formed his plan of attack. On D-day (15 February) the 151st RCT would move by water to Mariveles, a village at the southern tip of Bataan opposite Corregidor, while the 1st RCT would work down the east coast of Bataan. After a juncture on the east coast to cut all escape routes from Manila, the two teams would eventually bisect Bataan at the Pilar-Bagac road preliminary to mopping-up maneuvers. Corregidor would be taken by the 503d Parachute Regiment which was to be loaded at Mindoro and dropped on D plus 1, and a battalion of the 34th Infantry Division, having moved previously to Mariveles, would cross to Corregidor shortly after the paratroop landing. Admiral Struble would command the supporting naval forces, a cruiser-destroyer

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group (Task Group 77.3) and the amphibious group (Task Group 78.3).[45]

Air action against Bataan, which began as cover for the seizure of San Marcelino, was intensified as the target date for the Mariveles landing approached. All visible targets in the southern section of Bataan were hit by twenty-four B-24's, seventy-two A-20's, and sixteen fighters on the morning of 10 February; twenty-four B-24's, seventy-three A-20's, and twenty-seven fighters attacked again that afternoon. Mariveles town was destroyed by the heavy bombers. Raids were continued on a similar scale through the 15th, and during the morning of that day, after a short naval bombardment, the 151st RCT secured its objectives against only slight ground opposition. The 1st Infantry Division began its attack on 13 February and moved down the coast to join the 151st five days later just north of Cabcaben. That same day elements of the 149th RCT, following a "rolling air barrage," started across the Pilar-Bagac road. Begun at 0700 and continued until 1700, the barrage employed forty-eight B-25's and sixty fighters in the largest and longest close support mission in the sector. On 20 February elements of the 1st Infantry which had taken over the attack reached Bagac and reported that fires and Japanese bodies found blown to bits and hanging from trees attested the remarkable fury of the barrage. Organized resistance on Bataan was declared broken by the capture of Bagac.[46]

Japanese defenses and the terrain of Corregidor made the task of 503d Paratroopers—the "Rock Force"—most hazardous. The island had been fortified as the key American defense for Manila harbor, and within its concrete tunnels and underground battlements U.S. Army troops had defied the Japanese for nearly six months in 1942. Plans for dropping paratroops on the small island were particularly daring. The only really suitable drop zone was Kindley Field on the "tail" of the island, an area dominated by Malinta Hill and the high mass of the island called "Topside." The only other area was "Topside" itself, where aerial photographs showed only two small, obstacle-studded drop areas, the former parade ground and a tiny golf course: both were surrounded by splintered trees, tangled undergrowth, and wrecked buildings. The slightest miscalculation would put paratroopers upon nearby cliffs or into the sea. The commander of the 503d Regiment talked of jump casualties of 20 per cent, but he agreed to seize "Topside" in time to cover the amphibious assault at San Jose

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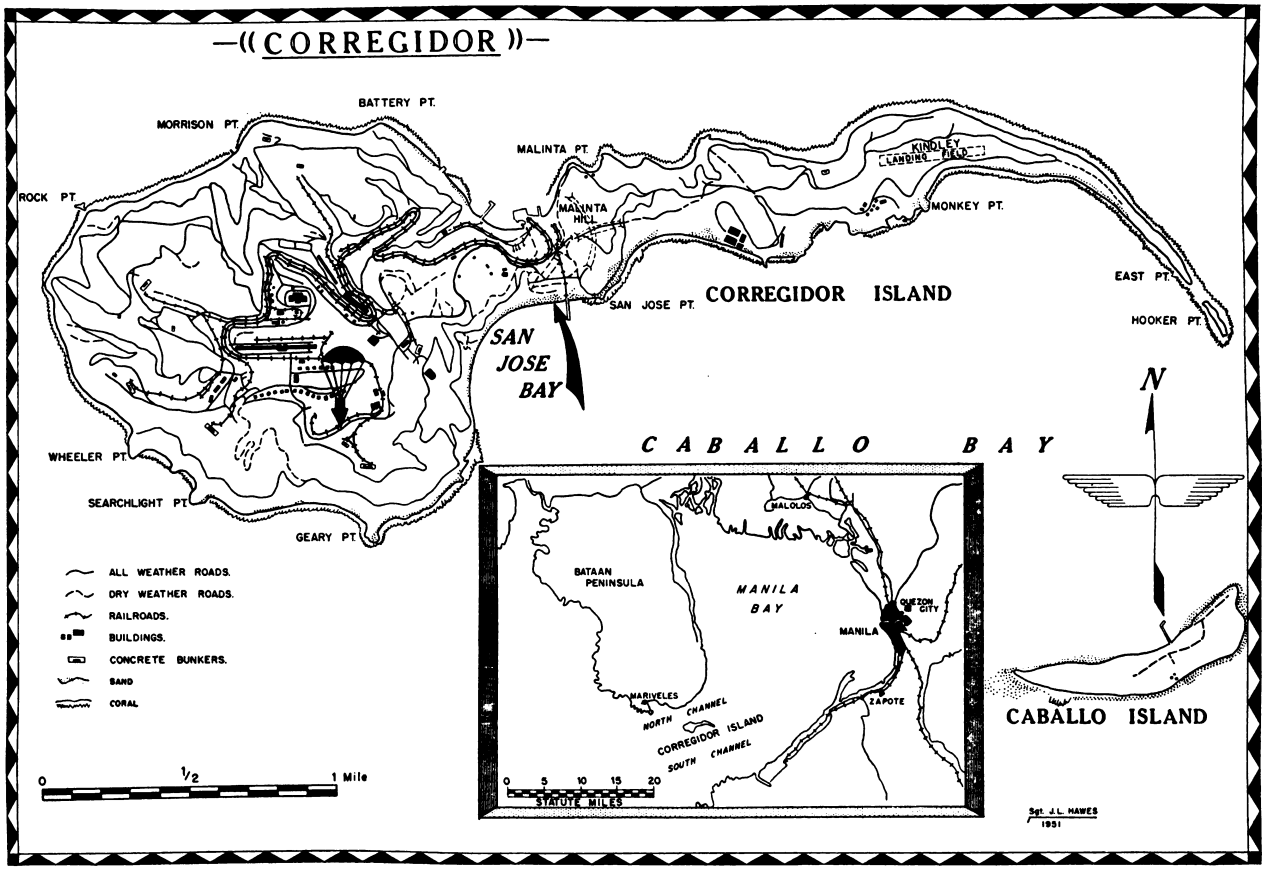

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beach, which was between "Topside" and Malinta Hill. No one knew the strength of the Japanese forces holding Corregidor: Sixth Army guessed approximately 850 men, but during December the Japanese had moved marines there, and the garrison, swollen by escaping soldiers, actually approached 6,000 men at the time of Allied attack.[47]

Once cleared for attack by GHQ on 22 January, Corregidor had received a substantial part of V Bomber Command's heavy bomber effort, and other planes commonly made it a target of last resort. With additional tonnage delivered by Seventh and Thirteenth Air Force heavies, Corregidor, less than one square mile in area, had absorbed 3,128 tons of bombs by 16 February, the heaviest concentration ever employed in the SWPA. Antiaircraft fire, never particularly severe, ceased on 12 February, but two days later carefully concealed guns scored hits on Allied vessels off Mariveles before they could be silenced by counterfire and aerial strikes. During the early morning hours of the 16th, moreover, the Japanese ran up the steel doors on the old ammunition magazines and brought out some thirty *hayabusa* boats for an attack which damaged four Allied vessels off Mariveles. Despite the 3,128 tons of bombs dropped on Corregidor, the Japanese troops hiding in the bowels of the battered island obviously remained very much alive.[48]

At 0759 on 16 February twenty-four B-24's winged away from Corregidor after dropping frag bombs on the island's gun positions. Between 0800 and 0829 eleven B-25's bombed AA positions and the south coast of the island, while thirty-one A-20's bombed and strafed both Corregidor and nearby Caballo Island, where a few AA batteries were operating. Precisely at 0830 the lead C-47 of the 317th Troop Carrier Group passed over the drop zone at 300 feet, observing no activity; at that moment the 3d Battalion, 34th Infantry, pushed off at Mariveles in LCM's. Very quickly, before the Japanese could recover, fifty-one C-47's of the first mission, wheeling over the two small drop areas in counterrotating orbits, deposited their eight man "sticks" from 500 feet. By 0932 all of the transports had made at least three precise runs over their zones. As the paratroopers landed, seventy A-20's strafed and bombed targets on Corregidor and Caballo, and at 0930 naval vessels commenced fire against San Jose beach preparatory to the amphibious landing at 1028. Support aircraft controllers, dropped by parachute or airborne in a hovering B-25, di-

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rected close support missions throughout the morning, and shortly after noon the C-47's were back with more paratroops and parabundles. This drop, like the one in the morning, was marred only by a strong and tricky surface wind which blew some of the men over the cliffs or into obstacles outside the drop zones. Enemy machine-gun fire caused a few casualties and damaged a few planes, but casualties for the day were only 10.7 per cent, or 222 men out of the 2,065 dropped.[49]

Once the "Rock Force" was ashore, operations progressed smoothly. Because of the favorable tactical situation, paratroopers scheduled for drops on the 17th were flown to San Marcelino and returned by water to San Jose beach. Japanese plans for defense had ignored airborne attack, and once "Topside" was lost, the enemy's positions and wire communications could not be used effectively. Air support strikes continued on call and were reported to be very effective: napalm penetrated into some caves as deeply as thirty-five feet, and on the 19th demolition bombs reached an underground barracks, killing some 500 Japanese. By 27 February only a few parties of Japanese remained on the island. MacArthur ordered cessation of all air attacks against the island and derelict ships in the bay on the 28th, and on 1 March Manila Bay was being used as an Allied anchorage.[50] "Corregidor," observed MacArthur after an inspection, "is a living proof that the day of the fixed fortress is over."[51]

Elsewhere on the XI Corps front, the 40th Division was battling the *Kenbu* force in the Zambales Mountains. Fighting from cave positions in the almost perpendicular cliffs of the Snake Hills, the enemy had slowed the division to a snail's pace. At the suggestion of Fifth Air Force, the division pulled back to provide a safety zone of 1,000 yards, and then on 21 and 22 February a total of 163 B-24's placed 575.5 tons of 500- and 1,000-pound bombs on the caves; fighter-bombers saturated the positions with napalm on the same days as well as on the 23d, just before the division renewed its attack. The advance proceeded now against slight opposition, and by 25 February the 40th Division had broken up the last organized resistance of the *Kenbu* force.[52] Guerrilla forces moving up the west coast of Luzon, and the 38th Division, transferred from Bataan to the Zambales, gradually eradicated small parties of the enemy with assistance from the air. Late in the month fifty fighter sorties were flown to Mount Pinatubo. Vegetation and the terrain usually prevented assessment of re-

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sults by the pilots, but constantly encouraging messages from the SAP controller gave cause for satisfaction. On 5 March missions by twelve P-47's of the 460th Squadron against High Peak were particularly successful: when the ground troops moved in there after a napalm and artillery attack, they counted 574 dead Japanese. By the middle of March the *Kenbu* force, with many men ill and starving, was nearing complete eradication.[53]

Coincident with the clean-up of Manila, elements of XIV Corps were penetrating to the edge of Laguna de Bay effectively to divide enemy forces to the southeast and southwest of the city. After the 6th Infantry and 1st Cavalry Divisions pushed into the mountains north of Laguna, where the former captured Montalban by the end of February, they both reached defensive lines consisting chiefly of elaborate cave positions which had been prepared for delaying action by men who could expect only death. The positions were fairly well stocked with food, equipment, and weapons of all types from the Manila dumps, and the advance became necessarily slow. The usual method of attack was to smother the caves with air and ground bombardment so that demolition parties could approach and seal the tunnel entrances, usually trapping about twenty-five Japanese to each cave. Heavy bombers struck every significant target, especially enemy concentrations in the villages of Antipolo and Ipo. On 6 March 98 B-24's dropped 250 tons on Antipolo, and 450 fighter attacks in the area between 8 and 11 March further lightened the task of the 1st Cavalry—the division reported that the "terrific bombing" had "literally blown [the enemy] out of his defenses." The 1st Cavalry entered the town on the 12th, where it was relieved by the 43d Division next day.[54]

Relieved of operations northeast of Manila by XI Corps and now concerned with operations southeast of Manila and east of Laguna, XIV Corps moved the 1st Cavalry toward Infanta on the coast, which it captured on 24 May. After exchanging the 38th for the 6th Division on 30 April, XI Corps gradually overcame the *Shimbu* force's southern pocket, and by early May it had surrounded an estimated 4,700 entrenched combat troops, well equipped with arms and ammunition, at the juncture of the Ipo and Angat rivers. Another force of about 2,700 men, remnants of infantry and shipping regiments, was cornered in the vicinity of Santa Maria–Bosoboso, and 6,200 more were holding the Mt. Oro–Mt. Pamitinan–Mt. Purro area. The corps

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predicted "bitter" and "desperate" opposition.[55] Late in April MacArthur called attention to the low water supply reaching Manila and suggested that the Ipo dam be captured as a priority objective; if this reservoir continued in Japanese hands or was destroyed, Manila faced a summer epidemic of enteric disease. New and more speedy tactics of attack were in order.[56]

The V Fighter Command accordingly prepared for the largest mass employment of napalm in the Pacific war: on 3–5 May a total of 238 fighters saturated the outlying defenses of the Ipo area with napalm and demolition bombs. These attacks proved very destructive, and, more important, when the fire exploded near Japanese positions, the usually stoic occupants seemingly lost all caution and fled into the open, easy targets for other forms of attack. The 43d Division had jumped off on 6 May, and as the Japanese were pressed back, V Fighter Command repeated the same general pattern of attack on 16–18 May. Operations officers carefully divided the 5-square-mile area held by the Japanese into sectors, and then sent 673 Lightnings, Thunderbolts, and Mustangs to turn the area into a sea of flames. Napalm-laden P-38's and P-47's, flying at 50 to 100 feet, attacked first, followed by P-51's which strafed and bombed the terrified Japanese as they tried to escape the conflagration. On the second day A-20's with frag bombs aided the Mustangs. As the 43d Division moved ahead with negligible resistance, it estimated conservatively that at least 650 Japanese had been killed by air action alone, while many others had been slaughtered as they ran from their caves into mortar, machine gun, and bomb bursts. At least 75 to 100 caves had been sealed, many known to have contained the enemy, and over 2,100 dead soldiers were counted in the area. The Ipo dam, although prepared for demolition by the enemy, was captured without damage.[57] After similar attacks had been made against the Santa Maria–Bosoboso pocket in advance of the 38th Division, stiff resistance immediately collapsed. Here, some 700 enemy bodies revealed the effectiveness of the air and artillery bombardment. Aided by smaller air support missions against more scattered enemy bands in the Mt. Oro–Mt. Pamitinan–Mt. Purro sector, XI Corps had eliminated *Shimbu* by 11 June.[58]

Already XIV Corps had cleaned out southwest Luzon and the Bicol provinces. In a carefully planned and skillfully executed amphibious and paratroop raid, elements of the 11th Airborne Division on 23 February had liberated 2,147 Allied internees at Los Banos Agricul-

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tural College near the southern shore of Laguna de Bay. The airborne phase of the raid, flown by 10 C-47's of the 65th Troop Carrier Squadron with 125 paratroopers from Nichols Field, was precisely coordinated with the arrival of infiltration parties; at 0700 the paratroopers dropped at the edge of the college grounds and joined infiltrators to surprise the Japanese guards at physical training before they could reach their weapons racks. Cooperating fighters strafed and bombed other parties of Japanese in the vicinity. Such was the complete surprise that only 2 Americans were killed as compared with 243 Japanese. Pushing into Ternate on 2 March, the 11th Airborne completed occupation of the southern shores of Manila Bay;[59] XIV Corps could now be used for clearing southwestern Luzon and the Bicol provinces, areas held by an estimated 7,000 and 3,200 enemy troops, respectively.[60]

The plan of campaign called for the opening of Balayan and Batangas bays followed by an advance eastward into Tayabas and Camarines provinces. Simultaneous with the latter advance, one reinforced RCT was to land at Legaspi on about 20 March and drive northward. On 6 March the 11th Airborne Division, reinforced by the 158th RCT, launched the attack to secure Balayan and Batangas bays. Allowed to relieve the 158th RCT with the 1st Cavalry Division shortly after 15 March, the augmented forces of XIV Corps opened and secured the two bays by the end of the month.[61]

Plans for the Legaspi invasion were complicated by reports of a highly organized beach defense reinforced by artillery ranging up to 6-inch guns. Tentative planning arranged the overwater movement of the 158th RCT by Task Force 78, while the 511th Parachute Regiment was to be concentrated at Nichols (later Batangas) for emergency airborne employment as task force reserve. The Fifth Air Force, due to move its headquarters to Clark Field on 24 March, charged the 310th Bombardment Wing at Mindoro with aerial preparation, convoy cover, and close support for the landing and subsequent operations. The V Bomber Command was to strike targets in the area with B-24's, placing particular emphasis upon the port and beach defenses, beach mines, and defenses along Albay Gulf. B-day was postponed until 1 April since the Navy wished additional time for aerial neutralization of beach fortifications.[62]

Neutralization of Legaspi began on 23 March and continued with daily attacks to B-day, although the weather made fulfillment of full

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schedules impossible. In order to release part of the Mindoro-based heavy bombers for missions to Formosa, XIII Bomber Command took responsibility for Legaspi between 26 and 30 March, but its 5th Group was able to reach the target only on the 26th, while the 494th Group, flying under operational control of XIII Bomber Command, was able to strike only on the 27th. The bombers and fighters from Mindoro, however, expended a total of 1,770.2 tons of demolition, incendiary, fragmentation, and napalm bombs on the town's defenses. Although Whitehead and Krueger sought to limit attacks to specific military targets, Japanese troop movements into the town reported by Sixth Army scouts forced the 310th Wing to "level" the town with a maximum effort on the 31st. Unfortunately, several civilians were killed, but when the 158th RCT was put ashore next morning, the enemy had abandoned his defenses. Except for the carefully preserved docks, Legaspi port and the town had been totally destroyed. Only thirty to forty rounds of artillery fire were directed against the assault transports by guns which the destroyers quickly silenced.[63] The Seventh Amphibious Force radioed that preliminary air bombardment had been "largely responsible" for the success of the landing.[64]

Progress of the 158th RCT up the peninsula, overland and by minor shore-to-shore landings, was so satisfactory that airborne reinforcements were not needed.[65] During April and May it worked up the Bicol Peninsula while the 11th Airborne cleared out the area southeast of Laguna de Bay. The 1st Cavalry, turning northward around the east end of Laguna de Bay, proceeded up the coast to lighten the responsibilities of XI Corps in the Infanta area. Though evidently accepting the loss of southern Luzon as inevitable, the Japanese holed up in scattered hill positions, where they resisted bitterly, even in the face of frequent low-level air attacks called for by the ground forces. On Mount Malepunyo just east of Lipa, to take an outstanding example, the 11th Airborne by late April had surrounded the last stronghold of the *Fuji Heiden* (Southern Luzon Defense Force), Hill 2610, which on 29 April B Company of the 511th Parachute Infantry was directed to seize. Since heavy casualties were expected, the 8th Fighter Group was requested to bomb the hill prior to attack, but the bombing promised to be so hazardous to the troopers (who were reluctant to pull back from hard-won positions only 400 yards from the top) that General Swing decided to cancel the strike.

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His men, however, earnestly requested that the bombing be undertaken and three flights (nine planes each) of P-38's, each plane bearing two 1,000-pound bombs, hit the hill in succession. Despite the discomfort caused by concussion on the second strike, the company commander reported that his men wanted a third. As the last bomb detonated, B Company rushed forward to gain the top before 124 stunned Japanese emerged from their caves, only to be slaughtered.[66] "We of the division," Swing wrote, "are proud that our confidence in Air Support has reached the point where we are willing to remain within 400 yards of 1,000 pound bombs."[67] This action broke the last remaining resistance in southern Luzon, and by the middle of May the Bicol Peninsula was firmly in American hands.

In northern Luzon on the I Corps front Yamashita's *Shobu* force, strongest of the Japanese commands, was entrenched in the most favorable position for defense and fought a stubborn but losing campaign until the final surrender in Tokyo. By the conclusion of the central plains campaign, I Corps had forced the Japanese back along the coastal routes of northwestern Luzon and into the entrances to Cagayan Valley, but the momentum of its drive had been stopped by Japanese emplacements around Baguio and in Balete Pass. During February the 6th Division pushed patrols through the mountains to Baler Bay, thereby isolating the whole of northern Luzon. In March the 25th, 32d, and 33d Infantry Divisions edged into the mountains where, despite mass artillery and air bombardment, the Japanese fell back only ten miles.[68] Japanese defenses along the northwest coastal plain were cracked during April, as a result of guerrilla attacks from the rear and a frontal assault on Baguio from the south. Col. Russell Volckmann, an American officer who had refused to surrender in 1942, had rallied an imposing but poorly armed force of some 8,000 Filipinos in the coastal mountains; given close support and airborne supplies by the 308th Wing, his force captured San Fernando on 14 March.[69] After the 37th Division was brought up from Manila to reinforce the 33d Division, the two units captured Baguio on 26 April, thus opening coastal routes as far north as Vigan. The approach to that city from the west was dominated by two pieces of commanding ground, Observatory Hill and Camp Henry T. Allen Hill, both occupied by determined enemy forces. In the assault on the former, enemy forces were routed by aerial bombing and strafing, and the American infantry seized it at a cost of but one man wounded. Simi-

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larly, in the attack on the latter hill, the infantry found that a number of serviceable heavy machine guns had been ready to fire on them from commanding positions, but the Japanese gunners had been so stunned from the preliminary air bombardment that they did not fire a shot. Some thirty enemy soldiers were found in one group, killed by concussion alone.[70]

During April I Corps also intensified its fighting along Highway 5 and the flanking Villa Verde trail, seeking to capture Balete Pass. Air support in this area of difficult terrain and strong opposition was available in abundance. The 25th Division, moving along the highway, reported sixty to eighty planes a day in direct support, and its 161st Infantry Regiment was helped in its advance by an average of thirty-five tons of bombs each day for the first week of May.[71] The 32d Division, operating along the tortuous and twisting Villa Verde trail, was satisfied with four strikes a day, usually two in the morning and two in the afternoon. In these wooded areas, as at Ipo, napalm was effective both for burning away covering vegetation and for flushing the Japanese into the open. Other strikes caused more direct casualties: 25th Division credited attacks against ravines east of the highway on 23–25 April with killing some 400 regimental command and supply troops.[72] Stubborn resistance slowly gave way under continuous pressure, and on 13 May, after a heavy air attack and artillery barrage, the 25th captured Balete Pass, gateway to the Cagayan Valley. Although slowed by the rainy season, the 32d Division had cleared Villa Verde by 27 May. The way was now open for an advance into the valley.

Electing to gamble that Yamashita had expended his best troops at Baguio and Balete, Krueger immediately decided to encircle and subdivide the enemy forces remaining in the valley. A force of guerrillas, rangers, infantry, and artillery—called the Connolly Task Force after its commander—was to proceed northward and eastward along the coastal routes to Aparri. The 33d Division was to mop up eastward toward the valley from Baguio, while the relatively fresh 37th Division was to enter at Balete and move northward along Highway 5. Having been tied down so long to defensive positions, the *Shobu* force was unable to maneuver against this attack. Air action further paralyzed the Japanese: in the Ambuclao-Bokod area, northeast of Baguio in the mountains, advancing ground troops found shallow graves of more than 1,000 Japanese supply troops, apparently air and

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artillery casualties. The ground soldiers called this area "Death Valley." The 37th Division drove northward to Bagabag with continuous patrols overhead and, as soon as the reinforcing 6th Division arrived to hold the juncture, continued northward toward Aparri. Working around the coastal route, the Connolly Force entered Aparri without opposition on 21 June; since it was too weak to hold the escape route, however, Krueger, who was already using air supply drops to his troops as they battled through mountainous terrain, immediately ordered a paratroop attack.[73] With 3 days' warning, the 317th Troop Carrier Group, augmented by 7 C-46's of the 433d Group for towing cargo gliders, moved down to Lipa airstrip; on the morning of 23 June the group dropped 994 men of the 511th Parachute Infantry Regiment on the abandoned Japanese airdrome at Camalaniugan. Only 5.6 per cent of the men jumping received injuries, mostly minor, and as soon as the gliders slid in with vehicles, the task force was ready to move. Three days later, on 26 June, elements of the 511th Regiment and 37th Division met at Alcala.[74] Except for mopping-up operations, undertaken by the Eighth Army on 1 July, the campaign for Luzon was completed.

The close support missions noted during the land campaigns were those which caused special comment by ground commanders, but they represented no more than a fraction of the total flown by Fifth Air Force pilots in their everyday work. Often they strafed or bombed some hillside or clump of trees pointed out by a smoke shell, seeing nothing and having only the voice of the ground controller for direction. Or perhaps they followed a liaison plane down to the target and attacked where it indicated. So great was the number of such missions that for the first time in the history of SWPA the air effort became one of massed numbers. Of 26,250 fighter and bomber sorties flown by the Fifth Air Force between 28 January and 10 March, 24,373 were ground support sorties; of 13,492 tons of bombs dropped and 8,133,000 rounds of .50-caliber ammunition fired, 11,697 tons and about 8,000,000 rounds directly assisted the ground troops. By informal agreement early in March, the bomb wings undertook support of one corps each, the 308th working with I Corps, the 309th with XI Corps, and the 310th with XIV Corps. Personal contacts between ground and air commanders, together with simplified communications, facilitated effective employment of the several air elements without loss of combined strength to meet special needs.[75]

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Air mistakes resulting in casualties to Sixth Army troops were few and limited almost entirely to the first two months of the campaign. On 29 January P-51's strafed friendly ground troops along the Pampanga River, and a Marine dive bomber accidentally jettisoned a bomb on an LSM off Damortis. On 4 February six B-25's strafed an area held by friendly troops in San Jose.[76] Reactions of the air commanders to these accidents was somewhat less philosophical than those of the ground generals, one of whom spoke of having experienced short rounds from his own artillery.[77] Unable to discover which P-51's were guilty at the Pampanga, Whitehead, suspecting that enemy Tonys with U.S. insignia might have done the strafing, grounded all P-51's and sent out patrols to shoot down any encountered.[78] Kenney cautioned all pilots to avoid flying over friendly vessels, and Whitehead issued elaborate instructions requiring positive identification of all targets prior to attack.[79] When twenty-three Liberators, trying to bomb Japanese caves west of Stotsenburg on 22 February, mistook ground markings and bombed "9–10 miles off the target" without damage to friendly troops, Whitehead promptly relieved the group commander.[80] On the other hand, there were instances of planes shot down when ground controllers sent them on as many as three dry runs through AA concentrations.[81]

Any final critique of the effectiveness of close support must represent the views of ground commanders. Krueger called the support rendered by the Fifth Air Force "superb" and observed that it materially assisted both in taking objectives and in holding battle casualties to a minimum.[82] At the close of the campaign, the SWPA Air Evaluation Board asked ground commanders to comment upon the success or failure of air support. With the exception of one commander who declined to make any statement, the results ranged from highly satisfactory to commendatory. By common admission the greatest difficulty in close support was the problem of coordination with the ground attack, but performance had improved as communications and operations personnel acquired experience.[83]

At the end of the war, when Yamashita came down out of the hills to take up residence in the New Bilibid Prison, he was asked by Allied ground officers about the effect of Allied artillery and air support upon his operations. Obviously limited for the most part to his observations in northern Luzon on the *Shobu* front, his general comments were exceedingly reserved. On morale, the effect of air support had

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not been too serious, although it "rubbed-in" the fact that the Japanese ground soldier had no protecting planes. On movement, air support had had a decided effect: when aircraft were in the vicinity, all movement ceased and even night hecklers were greatly feared. Strafing usually had not been serious, for his troops could take cover. Bombing required direct hits on scattered cave positions and was seldom more troublesome than the concussion resulting. Napalm had been of very little effect, once rains soaked the northern Luzon terrain. On materiel, air strikes had had little effect once his forces were entrenched, but any form of transport was very vulnerable. Yet, for all his reservations, Yamashita concluded: "If we had had your artillery and your air support, we would have won."[84] In another interrogation concerned with his experience in northern Luzon, Yamashita expressed admiration for the close coordination of air power and artillery to protect the flanks of the attacking divisions, coordination which had made his own plan to infilter and harass impossible. "We weren't ready for that type of fighting," he summarized, "and you beat us with it."[85]

FEAF Moves to Luzon

The air facilities constructed for FEAF at Lingayen and San Marcelino met the requirements for an assault campaign, but neither area could support continued operations of any magnitude. San Marcelino, moreover, would have to be abandoned once the rains began in May 1945. Locations were also required for FEAF Headquarters and for the major logistics establishment to be built for FEASC.

Faced with commitments requiring AAFSWPA to bomb Formosa during the Okinawa operations and needing heavy bombardment bases nearer to Luzon than Leyte-Samar, GHQ had readily agreed to Whitehead's proposal for two B-24 fields on Mindoro. Work was begun at Caminawit Point (later called McGuire Field) on 2 January, and a 7,000-foot runway was ready for use on 26 January. Without steel matting, which had been sunk, the engineers had to improvise a clay and gravel subsurface and coat the runway with gravel chips shot with asphalt. The other heavy bomber strip, Murtha Field, had been started on 27 January and its steel-mat runway was opened on 5 March. Because of subsurface difficulties it had to be reworked a little later, but the rains were late and Hill and Elmore remained usable at the time.[86] During the summer of 1945 these bases would be of

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value in the southern Philippines campaign. Kenney, who had called Mindoro a "gold mine," had been right.[87]

FEAF got no such ready approval for the development of all-weather bases on Luzon, chiefly because in the spring of 1945 SWPA

had no directive for operations subsequent to the reduction of the Philippines. In October 1944 Arnold had written Kenney about plans to base a projected XXII Bomber Command and perhaps the XX Bomber Command on Luzon.[88] The B-29 project continued hot through April 1945, requiring Kenney to plan for very heavy bom-

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bardment bases, but no definite orders came; by May base sites became available on Okinawa.[89]

Kenney and Whitehead were anxious to locate FEAF tactical units as far north as possible and had hoped to base both the Fifth and Thirteenth Air Forces on the northwestern coast of Luzon.[90] During the middle of February GHQ directed USASOS to assume responsibility for all construction on Luzon; it promptly organized the Luzon Base Section Engineer Command (LUBSEC) with four subdistricts: the Mangaldan area, Clark Field area, Port of Manila, and south Manila area. With ground reconnaissance nearly completed, Kenney secured a commitment from GHQ on 17 February defining the Luzon air garrison, a listing of unit types which was slightly enlarged on 23 February. In general, dry-weather facilities were to be provided by 20 March and all-weather facilities by 15 May. The units specified were those of Kenney's first-phase tactical movement plus an air depot (four air depot groups). With this authority FEAF secured five all-weather airdromes: Clark, Porac, Floridablanca, Nichols, and Nielson. The first three were spread about twenty miles north and south of Fort Stotsenburg and were used by tactical units, Clark and Floridablanca having dual heavy bomber runways capable of extension for B-29's; Nichols and Nielson served FEASC's Manila Air Depot. Work began on all the fields early in March and they were practically complete in May.[91]

Whitehead moved tactical units into the Clark Field area as quickly as the engineers prepared runways and any sort of parking space. Air units from San Marcelino moved overland, and the Fifth Air Force established its headquarters and those of its commands at Fort Stotsenburg on 24 March. The old fort, only slightly damaged by the withdrawing Japanese, furnished the best quarters and working conditions which the air force had known north of Australia; only the 91st Reconnaissance Wing, located in the old stables, may have thought differently. Recreation was adequate for the first time since June 1944. By the end of May, the Fifth Air Force had most of its tactical units at Clark, Floridablanca, and Porac, with lesser aggregations at Mindoro and Lingayen.[92]

Although an advanced echelon had been opened earlier, FEAF Headquarters late in April moved into Fort William McKinley, just outside Manila, a move timed closely to follow that of GHQ, which established its command post in downtown Manila on 12 April. Fort

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McKinley, unlike Stotsenburg, had been heavily fought over, and only a few buildings remained of a formerly extensive post. Most of lower-ranking headquarters personnel remained in tents until bamboo shelters were built, but streets, a water system, and a swimming pool were convenient luxuries.[93]

FEASC had planned to meet the needs of the Philippines campaign with its two IV ASAC depots in New Guinea, Depot No. 3 at Biak and Depot No. 1 at Finschhafen. Despite construction delays, the Biak air depot had begun operations in mid-September 1944, and early in December IV ASAC moved its command post from Finschhafen to Biak, assuming direct supervision of the repair, maintenance, and erection facilities there. During November V ASAC had tried to move its Townsville depot activities to Leyte, only to become bogged down by the rains.[94] Although General McMullen thought that V ASAC showed a commendable accomplishment against the many obstacles confronting it on Leyte, he found it necessary in January 1945 to begin an expansion of the Biak air depot* to serve the Philippines[95] and to look northward to Manila for a more permanent solution to his problem. Early in February he sent a scouting party to follow the fighting into Nichols and Nielson fields, tentatively committed to FEASC for its Depot No. 7, designed to become the largest of its kind in the SWPA. On 21 February an advanced detachment of FEASC with attached bomb-disposal experts and military police flew to Nichols. Three days later FEASC issued revised warning orders for the movement of the 4th (Leyte), 49th (Darwin), 12th (Townsville), and 81st (Finschhafen) Air Depot Groups to Manila between 1 March and 1 June; the Headquarters, V ASAC, and FEASC were to move forward on 1 May and 1 June.[96] A usable depot was to be completed at Manila by 30 June, and all attendant facilities by 1 November 1945.[97] Difficulties in securing shipping and unloading problems at Manila Bay slowed movement of service troops to Luzon. Construction supplies were short; the first depot troops began to build with materials which they had scavanged from the dumps around Nichols and Nielson. FEAF also insisted that FEASC first get a bulk of technical supplies to Manila and then worry about an orderly air depot. "I would rather have a great deal of excess supplies not prop-

* The Biak air depot remained the most productive FEASC installation through July 1945, by which time it was slated for liquidation. Finschhafen was all but closed on 1 August 1945.

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erly binned and sorted," admonished Col. W. H. Hardy, FEAF A-4, "than an insufficient amount completely binned and warehoused."[98]

On 20 April FEASC nevertheless officially announced that the Manila Air Depot was open for supply, aircraft erection, and a limited amount of minor aircraft and equipment repair.[99] During May the new depot surpassed Biak in the number of service units assigned, but its emphasis necessarily ran toward supply, with Biak and Leyte still doing most of the aircraft erection and processing of ferried aircraft.[100] By August, however, Manila was about ready for the approaching end of operations at Biak.[101] FEASC, having successfully kept pace with tactical air operations in the Philippines was now concerned with the development of an air depot at Naha, on Okinawa, designed to serve both FEAF and the USASTAF* during the projected campaign against Japan.

The five airfields approved by SWPA on 23 February were but part of those wanted eventually by General Kenney, but GHQ, citing the need for other essential base facilities, the shortage of engineers (80 per cent of the aviation engineers on Luzon were never used on aviation projects), and the shortage of shipping, proved unwilling to increase the Luzon air facilities. Actually, the five airfields authorized met FEAF's most pressing needs, but if it was to undertake missions to the China coast and larger attacks on Formosa, it needed another field as far north on Luzon as possible. Early in March, as soon as guerrillas had captured the area, Col. D. W. Hutchison, commander of the 308th Wing, flew food up to Laoag and got native labor working on the Japanese strip there. Brig. Gen. Leif J. Sverdrup, acting chief engineer, SWPA, agreed to lend some heavy equipment, dump trucks were borrowed from air units in the central plains, and on 22 May—the same day that GHQ issued a construction directive—a 5,000-foot all-weather runway became operational. Late in April the 3d Air Commando Group moved to Laoag and assumed command over Gabo Field. With additional construction now blessed by GHQ but still under air force direction, Gabo would become a vital link in FEAF's movement to Okinawa.[102]

* See below, p. 692.

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CHAPTER 15

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THE CLEAN-UP

IN THEIR northward progress from New Guinea to Leyte, Mindoro, and Luzon, SWPA forces had bypassed substantial enemy garrisons in the Netherlands East Indies, Borneo, and the southern Philippine Islands. Continually subjected to air attack, those garrisons had suffered an attrition which greatly reduced their capacity to interfere in any serious way with Allied operations. The invasion of Luzon, moreover, placed U.S. forces, both air and sea, in a position to maintain increasingly effective interdiction of the lines of communication joining enemy garrisons in the south with the Japanese homeland and thus to cut off all hope of their reinforcement. Since U.S. planners by 1945 were emphasizing the possibility of an early assault on Japan itself, there was a strong temptation to leave enemy garrisons south of Luzon to wither on the vine, much as previously bypassed forces had been left in the Solomons.

The temptation, however, was met by several objections. In planning the Philippines operations it had been evident that air bases in Borneo would add to the effectiveness of the attempt to interdict enemy communications in the South China Sea. Political considerations carried even greater weight. The Allied command in the southwest Pacific was in fact as well as name a working alliance in which the United States was only a senior partner. General MacArthur felt that Australian and Dutch interests in the reconquest of bypassed areas could be ignored only by violating the international agreement on which his command rested.[1] In addition, he had long been guided by a strong sense of the obligation the United States bore for the liberation of the Philippine people,* and that obligation was only partially fulfilled by the freeing of Luzon.

* See above, pp. 279–80.

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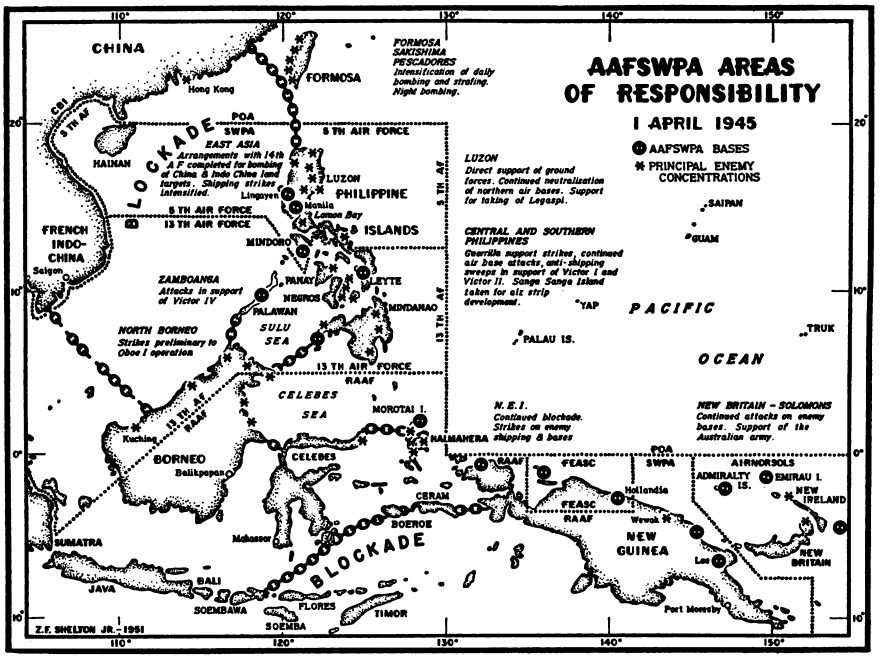
The opposition to the plan to bypass areas south of Luzon received support from the fact that a substantial part of the forces needed for a clean-up campaign were available, or could be made available, without resort to an overly difficult redeployment. Since it had been decided that Australian forces, which had fought side by side with those of the United States in the New Guinea campaigns, would not be used in the reconquest of the Philippines, RAAF Command and veteran Australian ground units could assume the main burden of attack



in NEI and Borneo. In the northward advance of U.S. forces, Sixth Army and Fifth Air Force served as the spearhead with Eighth Army and Thirteenth Air Force in support, so that the Eighth Army was in position to clean out the southern Philippines while the Sixth completed its conquest of Luzon, and the Thirteenth Air Force from its rearward bases could reinforce the efforts of RAAF in a westward move or could strike northward against southern Philippine targets. The delay in reaching a decision on the mission to be assigned MacArthur's command after the recapture of Luzon lent further encouragement to the planning of secondary offensives within the SWPA.[2]

Although it eventually was necessary to postpone the execution of

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plans for reduction of enemy positions in Java because hopes for an early redeployment of forces from the European theaters did not materialize,[3] at the cessation of hostilities in August 1945 the reoccupation of the southern Philippines and of Borneo had been completed in operations VICTOR and OBOE.

VICTOR

The MUSKETEER plan of 10 July 1944* had assumed that the advance to Luzon by way of Sarangani Bay and Leyte would be followed by a series of operations for the reduction of bypassed enemy positions on Mindanao and in the Visayas. Subsequent revisions of this strategy brought corresponding changes in plans for the southern Philippines and combined those plans with discussions of action to be taken in Borneo and NEI. The timing of proposed operations necessarily remained flexible even in the MONTCLAIR plan of February 1945, which joined the VICTOR series (Palawan, Zamboanga on Mindanao, Panay–northern Negros, Cebu–southern Negros–Bohol, and central Mindanao in that order) with an OBOE series for the seizure of Tarakan Island, Brunei Bay, and Balikpapan in Borneo and of Java.[4] General Eichelberger's Eighth Army at Leyte was to have over-all command, with an Australian military force in immediate charge of OBOE operations. To Brig. Gen. Paul B. Wurtsmith's† Thirteenth Air Force went control of VICTOR air operations and to RAAF Command the primary responsibility for support of OBOE.

The Japanese garrisons to be successively attacked in the VICTOR operations belonged to the enemy's Thirty-fifth Army, commanded by Lt. Gen. Nunesaku Suzuki, who had been in command at Leyte. Numerically his troops were perhaps equal to the attacking American forces, but they lacked air support and, with inter-island barge traffic reduced to a minimum, they had to fight as isolated units.[5]

For the aerial war, Palawan and Zamboanga outranked in importance all other objectives in the series, since they offered air bases useful for the advance on Borneo and for interdiction operations over the South China Sea. First on the schedule, invasion dates were set at 28 February for Palawan and at 10 March for Zamboanga, GHQ issuing the necessary orders on 6 and 14 February respectively.[6] Both opera-

* See above, p. 282.

† He replaced General Streett in command of that force on 30 January 1945.

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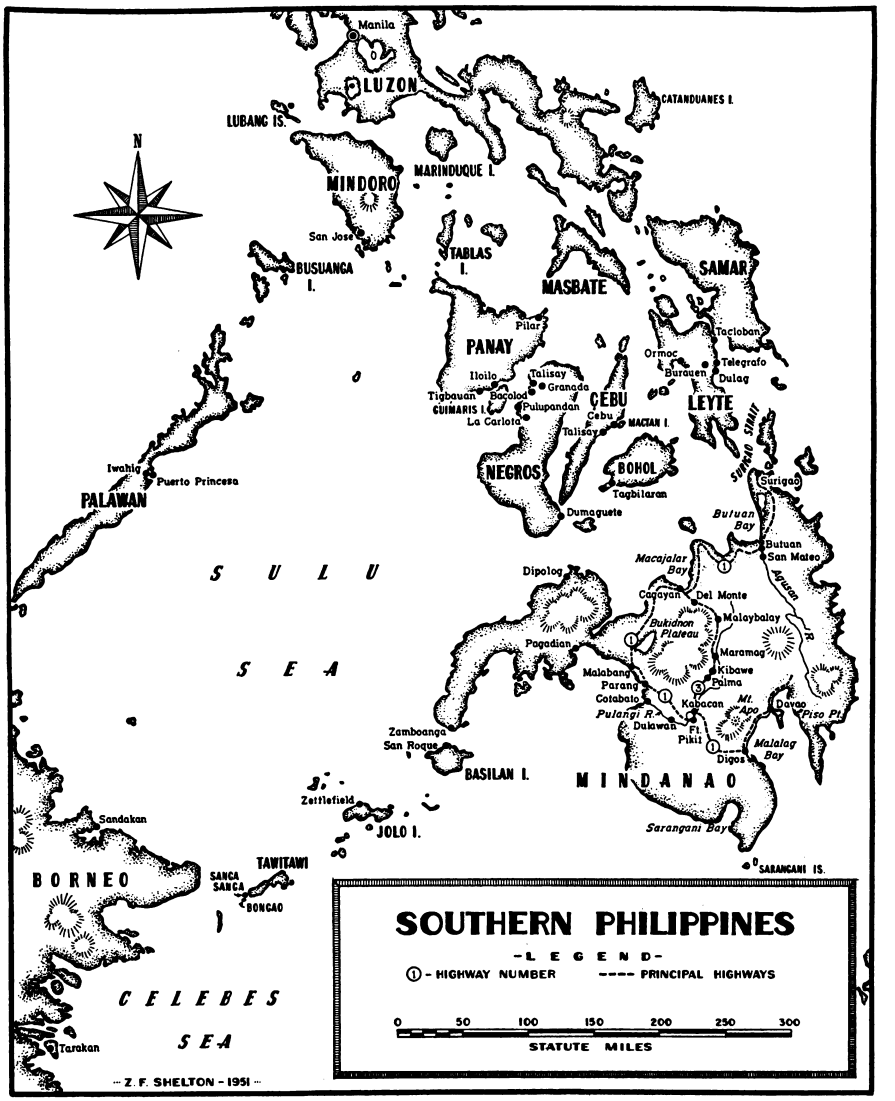
tions were charged to Maj. Gen. Jens A. Doe's veteran 41st Infantry Division.

Palawan, the westernmost island of the Philippines, is long, narrow,



mountainous, and relatively undeveloped. At Puerto Princesa the enemy had developed two airdromes, one with a concrete strip and both regarded as capable of extension and improvement for Allied use.

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Once the island was taken, the American air garrison was to consist of a detachment of the 419th Night Fighter Squadron (P-61's) the 347th Fighter Group (P-38's), the 42d Bombardment Group (B-25's), a detachment of the 2d Emergency Rescue Squadron, related service and communications units, and the Navy's VPB-17 (a tender-based search unit). The total air personnel was to be 5,452 men. The engineering effort was charged to the 1897th Engineer Aviation Battalion under control of Eighth Army but subject to advice from Brig. Gen. Earl W. Barnes, whose XIII Fighter Command had been assigned control of all air operations. Allied Air Forces had hoped for allocation of an additional engineer battalion, but since the engineers figured that the one battalion could put one 5,000-foot all-weather strip in operation by H plus 6 for one fighter group and a night fighter flight to cover the Zamboanga operation, this request was not pushed. It was estimated that by H plus 15 a 6,000-foot strip would be ready for the medium bombardment group and the air-sea rescue flight. After the first air garrison was emplaced, further facilities were to be developed for the 7th Photo Reconnaissance Squadron, VPB-117, and the VPB-128 as well as for staging one heavy bombardment group.[7] As the assault air force, Thirteenth Air Force issued its operational orders on 11 February and amplified these by a letter of instruction on 19 February, the latter a detailed air support plan for all units of the Thirteenth (including attached Marine Air Group 14) and supporting air organizations.[8]

Actually, aerial preparation had already begun—the neutralization of Visayan airdromes from Leyte and Mindoro having been an essential phase of the Luzon landings. Similarly, the Thirteenth Air Force from Morotai had been working over Celebes and Borneo airfields. Although the 5th and 307th Bombardment Groups were employed against Luzon targets in early February, between 5 and 8 February they hit the Borneo airdromes at Manggar, Sepinggan, Miri, and Tawau, and from 8 to 15 February they were used against Corregidor. Following a two-group strike on 16 February against Kendari airfield in the Celebes, they returned to Borneo supply, personnel, and equipment targets from 17 through 26 February and airstrips from 27 February through 1 March. The Seventh Air Force's 494th Bombardment Group from Palau performed in like manner over the Davao-Zamboanga airfields on Mindanao; LAB-24 "snoopers" flew interdiction missions through the Celebes, over Makassar and Balabac

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straits, and on through the Sulu Sea; and the 42d Group's B-25's with the 347th Fighter Group from Morotai hit such targets as Matina and Zamboanga airdromes on Mindanao and Zettlefield airdrome on Jolo Island. Fifth Air Force fighters and Marine Air Group 14 from Leyte-Samar attacked targets in the Visayas while naval patrol planes performed the search missions. Mindoro-based fighters of the Fifth hit Puerto Princesa on 5 February and a defense position at Canigaran on 24 February.

Two days later the final preparation began, when the Thirteenth's 347th Fighter Group hit supply, bivouac, and defensive areas at Puerto Princesa with napalm.[9] They were followed over the same targets by seventy-two A-20's of the 3d and 417th Groups flying from Mindoro and thirty-six P-38's with more napalm. A group of P-47's hit a sawmill area with 1,000-pound bombs. On 27 February (H minus 1) ninety-five Havocs bombed and strafed supply and personnel areas; after forty-four Fifth Air Force heavies hit defense installations, two groups of fighters attacked the same targets with napalm. Fighters from Mindoro provided convoy cover and with the aid of A-20's covered the troops after they had gone ashore, but ground controllers were hard put to find targets for them.[10]

Following a bombardment of the beachhead area by cruisers and destroyers attached to Rear Adm. William M. Fechteler's amphibious force, the 41st Division's 186th Regimental Combat Team went ashore unopposed at 0830 on the 28th. By 1200 Puerto Princesa and the two airstrips had been taken. Other landings were made on the west side of the bay opposite Puerto Princesa. On 1 March the town of Iwahig was taken, and by 3 March a perimeter around the bay was established. Extensive patrolling from the perimeter ran into little opposition as the engineers and construction troops began work on the airstrip, so that on 20 March one battalion of the 186th RCT was shifted to Zamboanga and on 25 March the regimental headquarters and another battalion departed, leaving the 2d Battalion for the final clean-up. General Barnes and the task force engineer, Lt. Col. James E. O'Keefe, had inspected the airstrips on H plus 1 and decided to concentrate on repair of the 4,600-foot concrete strip and to add 2,000 feet to it. The many bomb craters, poor concrete, and underground seepage delayed the completion of the task until H plus 20,[11] so that the first formal missions from the new base were flown on 24 March, too late to be of assistance to the Zamboanga landing.

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That landing was protected by Marine fighters staging through a guerrilla-held field at Dipolog on Mindanao, an expedient made possible by previously developed plans for the assistance of friendly guerrillas. The American landing at Leyte had greatly stimulated the activity of Filipino guerrillas, who increasingly supplied through a variety of channels helpful intelligence of air targets. In return, XIII Fighter Command, while in operational control at Leyte as the 13th Air Task Force, had initiated a scheme for rendering air support to the ground operations of guerrilla units. Worked out in collaboration with the G-2 and G-3 Philippine Sections of GHQ, it provided for special teams of air support personnel to be stationed, as certain signal aircraft warning (SAW) and ground observer units had already been, with guerrilla organizations throughout the southern Philippine Islands. When it became apparent that Palawan facilities would not be ready in time for the Zamboanga landing, the 5279th Airborne Fighter Control Center (P) and two light-weight reporting SAW platoons were flown to Dipolog with enough supplies to permit the staging of one fighter squadron from J minus 2 through J plus 12 days for convoy cover and ground support at Zamboanga. Sixteen Marine Corsairs of MAG 12 received the supporting assignment.[12]

The purpose of the landing on the Zamboanga Peninsula was to secure control of Basilan Strait—one of the two main approaches to Asia from the southwest Pacific. The landing would also provide naval and air bases for support of OBOE and of operations to reduce enemy forces in other parts of Mindanao. Zamboanga offered airfields protected by the mountainous terrain of the upper peninsula, an area controlled by friendly guerrillas, as well as good landing beaches and two airfields on the southeastern coast, near the town of Zamboanga, one Japanese-developed and the other a prewar commercial field of sod surface. The enemy garrison was estimated at from 5,000 to 8,000 troops.[13]

GHQ operations instructions of 14 February 1945 designated the 41st Infantry Division (minus one RCT) as the assault force. The air garrison was to comprise one group of fighters, one group of dive bombers, one VMB (B-25) squadron, one flight of night fighters, and one air-sea rescue flight—a total of 4,768 airmen. Air facilities for the fighters were to be ready by J plus 5 and for the rest of the air garrison by J plus 15. Service units to be stationed there totaled 3,057 men. An amendment of 8 March provided for operations to seize

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Tawi Tawi Island and to establish there emergency staging facilities for two squadrons of twin-engine fighters by J plus 43.[14] Allied Air Forces instructions of 20 February were also amended on 3 March to provide for the Dipolog operation, and on 13 March Thirteenth Air Force was directed to transport by air the necessary service forces for the field on Tawi Tawi. The Thirteenth's instructions assigned operational control on Zamboanga to Col. Clayton C. Jerome, as commander of marine air groups, Zamboanga.[15]

In the aerial preparation once again U.S. fighters and dive bombers from Leyte hit Visayan targets while the RAAF took care of the Celebes targets. The 5th and 307th Bombardment Groups pounded airdromes in northern Borneo from 1 to 5 March and the 494th Group attacked Mindanao fields. From 6 to 9 March the heavies bombed eleven targets on Zamboanga, an area visited regularly by the 42d Group's Mitchells from 1 through 9 March, and the 347th Fighter Group undertook to neutralize nine targets either with napalm or 500-pounders. On J-day (10 March), while Fifth Air Force fighters were covering the assault convoys from their Leyte and Mindoro bases, three of the Fifth's heavy groups bombed the barracks area, and the 494th Group, having staged through Samar, hit the underground hangar area. After the ground troops landed about thirty minutes later—at 0915—a bombing and strafing of the hangar area was added to the heavies' attack by two Fifth Air Force A-20 groups at 1030 hours. Combat air patrols were supplied by Marine Air Group 12, by the 347th Fighter Group, and by the 42d Group's B-25's staging through Dulag.[16] General Eichelberger has described the landings as a "coordinated job by three arms of our forces and admirable to watch."[17]

The covering force of cruisers and destroyers commanded by Rear Adm. Russell S. Berkey gave the Zamboanga area and the beachhead at San Mateo a two-day preliminary bombardment. This also featured "hunter-killer" teams—two PT boats and two B-25's—working over the bays and inlets around Zamboanga, Basilan Island, and Basilan Strait. General Doe's two regimental combat teams—the 162d and 163d—met little opposition aside from harassing mortar and artillery fire in capturing Wolfe Field and establishing a perimeter halfway between that field and the town of Zamboanga on J-day. The next day against increasing resistance they captured Zamboanga and the San Roque airdrome four miles beyond. Patrols also cleaned out the

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few Japanese on Basilan Island. Strong infantry opposition did not develop on Zamboanga until March, when the ground troops approached the prepared hill positions four to six miles inland to which the Japanese had retreated. Heavily mined roads made tanks ineffective and the infantry attack was so canalized by terrain that enemy positions had to be taken laboriously by artillery-air-infantry actions. Marine fighters, Marine dive bombers, B-25's, and even B-24's on 14 and 17 March were called on for ground support missions. By 26 March, however, the Japanese had been pushed back from their more strongly fortified positions to hastily constructed lines and were already trying to break through the guerrilla line in their rear.[18] By the end of the month organized Japanese resistance had ended.

From Zamboanga, units of the 41st Division landed without opposition on Sanga Sanga in the Tawi Tawi group on 2 April; a landing was made on Jolo Island, also without opposition, a week later. Both operations had been preceded by B-24 attacks and both landings received air support from Thirteenth Air Force Liberators and Marine dive bombers. Also on 9 April a battalion of the 186th RCT from Palawan landed on Busuanga Island north of Palawan, further securing Mindoro Strait. San Roque airdrome, renamed Moret Field, was used on J plus 3, and MAG 12 Corsairs came in on 15 March, followed by the SBD's of MAG 32 a week later and the PBJ squadron on 30 March. To help in the OBOE operations, beyond the range of the Marines, elements of the 18th Fighter Group were moved into Zamboanga on 10 May. Similarly, elements of the 347th Fighter Group and all of the 419th Night Fighter Squadron moved from Palawan to Sanga Sanga on 25 April and in late June respectively.[19]

The basic patterns of the remaining VICTOR operations were analogous, as Maj. Gen. Rapp Brush's 40th Division secured Panay and then landed on northern Negros, Maj. Gen. William H. Arnold's Americal Division occupied Cebu and secured southern Negros and Bohol, and X Corps (24th and 31st Infantry Divisions) under Maj. Gen. Franklin C. Sibert invaded central Mindanao through the Malabang-Cotabato area. Even though the strength of Japanese garrisons had been underestimated in all cases, initial objectives were quickly captured. The Japanese fortunately chose their now familiar tactic of a "battling withdrawal" into prepared positions in the interior, where the lack of aerial reconnaissance, poor communications, and the interference of Filipino guerrillas robbed the enemy of any advantage from

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numerically superior forces.[20] Japanese troops roughly equivalent to pre-invasion estimates of the enemy's total strength were killed or captured in the VICTOR operations, but at the termination of hostilities as many more surrendered.

Since remaining operations in the series were primarily ground actions, the heavy bombers of the Thirteenth Air Force and the 494th Bombardment Group needed no help from the Fifth's heavy groups. Other air units available were those of the XIII Fighter Command on Palawan, units of the 85th Fighter Wing and MAG 14 on Leyte, Fifth Air Force fighters and A-20's at Mindoro, the Marine air groups at Zamboanga, and naval search and reconnaissance units. Because of the widespread activity of friendly guerrillas and the shortage of engineers available to Eighth Army, planes were prohibited from bombing and strafing docks, harbors, waterworks, bridges, navigational aids, and any shipping (after the operations started) unless specifically requested to do so by ground commanders. The only targets relatively unrestricted were airdromes and even here care had to be taken since guerrillas had control of many of them. So the pattern of aerial operations was one primarily of direct ground support called for and spotted by air liaison parties with U.S. troops and guerrilla units.[21]

Plans for this later phase corresponded closely to those developed in earlier VICTOR operations. SWPA Headquarters would issue a staff study and after receiving comments from the lower echelons would follow with the operations instructions. The Allied Air Forces operations instructions amplified the aerial mission and passed on responsibility to the Thirteenth Air Force, which in turn amplified the aerial assignments after conferences with its lower echelons and with Eighth Army, Seventh Fleet, and the division or corps headquarters of the assault force. In contrast somewhat to Sixth Army procedure, Eighth Army's field orders were fairly general, requiring the headquarters staff of the assault force to work out detailed intelligence and operational planning which would be submitted to Eighth Army for final approval. Similarly, the air support plan of the Thirteenth Air Force and the naval plan of Seventh Fleet would be submitted to Eighth Army. General Eichelberger credits much of the success of his rapidly mounted operations to careful logistical planning.[22] Eighth Army logistic annexes fail to bear out his statement that the principle of fifteen days' supply was substituted for the usual sixty, but it is evident that careful staff work was used in husbanding resources.[23]

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Panay, separated by the eleven-mile Guimaras Strait from northern Negros, is mountainous on the north and west with a rolling fertile plain in the southeast, where there are good landing beaches and the port and city of Iloilo. The prewar governor, Tomas Confessor, had maintained a free civil government on Panay throughout the war with some aid from the guerrilla chief, Col. Nacario Peralta. Despite the guerrillas the Japanese clung to the Pilar–Iloilo–Guimaras Island region with a force estimated at about 4,000 men.[24] Except for the protection afforded by missions flown in support of the campaign on Luzon,* the occupation of Panay was undertaken with only one preparatory air attack. Liberators of the 5th Group bombed the Tigbauan supply and personnel area on 17 March (G minus 1). The 307th Bombardment Group continued to work over Borneo targets while the 5th and 494th bombed the Negros airfields of Bacolod, Alicante, Malogo, Fabrica, Silay, Talisay, and Carolina. The cover and ground support missions were assigned to the 85th Fighter Wing (including MAG 14) which supplied combat air patrols over the convoys, the landing area at Tigbauan, and over the Negros airfields. On G-day, Fifth Air Force A-20's were over Panay but for lack of targets were diverted to Negros.[25]

The 40th Division (less the 108th RCT), having sailed from Lingayen Gulf, after a light pre-invasion bombardment landed at Tigbauan about fourteen miles west of Iloilo on 18 March. There was no defense of the beaches; in fact, U.S. forces were met at the shore line by Colonel Peralta's strong guerrilla units. On the next day Mandurriao airfield was captured and American troops reached the outskirts of Iloilo, where they met the first real resistance. But the Japanese actually were abandoning the city and the guerrillas were already in possession of most of the inland area. The 40th Division's motorized columns had broken all organized Japanese opposition by 22 March. On 20 March, Guimaras Island had been secured with no enemy contact.[26]

Northwestern Negros (Negros Occidental), separated from the southeastern end by a very rugged mountain range, was the secondary target for the 40th Division. Here another very fertile plain had provided sites for the most extensive Japanese aerial development in the central Philippines.[27] Rear Adm. A. D. Struble's naval task group loaded the attack force early on 29 March to cross the eleven-mile

* See above, Chap. 14.

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strait for landings at Pulupandan at 0930. (This was just two days after and one day before related landings on Tablas and Masbate islands.) In order to secure the 652-foot Bago River bridge en route to Bacolod, the principal city, a special force of 62 men from the 185th Regiment had crossed the strait during the night, reached the bridge under guerrilla guide shortly after daylight, and successfully prevented Japanese demolition. They held the bridge until the main body of the 40th Division had safely passed over. The rapidity and surprise of the advance enabled the troops to secure Bacolod town and airstrip intact by noon the next day. Driving south, east, and north, the 40th Division secured La Carlota, Granada, and Talisay respectively by 2 April. When it became evident that the Japanese were retreating to the central mountains, General Brush sent motorized reconnaissance patrols around the perimeter of Negros Occidental, and by 4 April remaining pockets of resistance were pinned in the central mountain range, except for a small garrison at Dumaguete in southeastern Negros. It took time to root out the increasingly stubborn defenders, but Eighth Army declared organized resistance at an end in the Visayas on 24 June. The 503d Parachute Infantry RCT, which had been brought into Negros on 7 April, relieved the 40th Division of responsibility at that time and was engaged in mopping-up operations until the final Japanese surrender.[28]

Almost concurrent with the Panay-Negros operation came the conquest of Cebu-Bohol-Negros Oriental. The Americal Division (less the 164th RCT), having just finished the clean-up on Leyte, went from a tough job to an even tougher one. Cebu, the primary objective, boasted in Cebu City the second largest metropolis in the Philippines, a city which served as headquarters for the Japanese Thirty-fifth Army. Lt. Col. James Cushing, guerrilla chief on Cebu, in a report to Eighth Army had estimated the enemy garrison at 13,000 men. Actually, the Americal Division, after killing 9,300 on Cebu plus 700 on Bohol and Negros Oriental, received the surrender of approximately 9,000 more at the end of the war.[29]

E-day had been set for 25 March, but on the 22d SWPA Headquarters postponed it one day. Army, Navy, and Marine pilots had been hitting Cebu regularly with the aid of air support teams sent to the guerrilla forces long before the landing. One observer team was even situated so that it overlooked Cebu City, where from 19 to 26 March the 5th, 307th, and 494th Bombardment Groups concentrated

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on ammunition and supply dumps; on E-day the immediate rear of the landing area at Talisay Point, four to five miles southwest of Cebu City, was bombed with 1,000-pounders. Light bombers from Palawan and fighters from Leyte were on combat air patrol as the troops went ashore. The landing area was heavily mined but fortunately there was little enemy fire; again the Japanese chose to retreat—to positions in the hills west of and overlooking the city. The battered city and its reservoir were captured on 27 March, fortunately with little damage to its docks, and although Lahug airdrome was taken the following day, Japanese positions in nearby hills made it useless. Cauit and Mactan islands were secured, however, so that the airstrip on Mactan was used for courier, liaison, and aerial supply purposes.[30]

As Eichelberger put it, "the Japanese overlooking Cebu City were prepared to fight from the most elaborate defensive position yet encountered in the Philippines."[31] The Americal Division was kept under artillery and mortar fire and had to fight off constant attempts at infiltration. To break the deadlock, the 164th RCT (less the 3d Battalion) was brought in from reserve on 9 April and, guided by guerrillas, began a twenty-seven-mile march to Bagabag ridge in the Japanese rear. Meanwhile, for ten days heavy artillery fire and aerial bombing and strafing missions pounded the Japanese positions, with the Thirteenth Air Force using B-24's as aerial spotters and coordinators over Cebu for fighter strikes. On 20 April an attack simultaneously from front and rear caused the Japanese to withdraw to northern Cebu. The 3d Battalion of the 164th RCT had landed meanwhile at Tagbilaran on Bohol and by the end of April had reduced the small pocket of Japanese near Carmen. The remainder of the 164th assaulted Dumaguete on 26 April, quickly securing that city and scattering a weak enemy force.[32] Although the Japanese troops never fought again as a unified force, they maintained continued resistance until the final surrender in August, when the remaining force was still over 9,000.

The last of the VICTOR operations was a clean-up of Mindanao, which Eichelberger and his Eighth Army staff viewed with considerable misgivings. In addition to the estimated 30,000 to 34,000 Japanese, the engineers were apprehensive about the imminent rainy season and supply officers were worried about shipping. The main Japanese force was in the Davao region, and Eichelberger originally had hoped to make his assault there. But because of the vulnerability of

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amphibious operations in Davao Gulf and the tie-up of covering forces in the Okinawa operation, the Navy was unwilling to risk a landing there. The final plan was therefore based on a landing by X Corps in the Malabang-Parang-Cotabato area and subsequent overland action along Highway No. 1 to Kabacan, where there was a junction with the Sayre Highway which runs through central Mindanao to Macajalar Bay. From Kabacan Allied forces could follow Highway No. 1 to Digos on Davao Gulf, thus attacking the Japanese rear, or they could go north up the Sayre Highway. Should shipping and forces be available later other amphibious landings could be made to speed the campaign.[33]

Fortunately, the Japanese were in confusion. General Suzuki lost his life in moving his headquarters from Cebu to Mindanao in the third week of April. Maj. Gen. Yoshiharu Tomochika arrived from Cebu on 21 April, four days after the American landing, with orders from Suzuki to take command in the event of the latter's death, but General Morozumi as the senior officer present thought he should have command. The resulting confusion, aggravated by some interservice conflict, reduced the effectiveness of two army divisions and the naval and marine forces concentrated at Davao.[34]

The XIII Bomber Command Liberators had begun preparation for VICTOR V with a strike at Sarangani on 2 April, followed by raids on Malaybalay on 4 April and Davao from 11 to 15 April. On the 16th and 17th Cotabato was hit, as was the road junction at Kabacan on 17 April. On 18 and 19 April the bombers returned to the Davao area; Kabacan and Beo were also hit by the heavies on 19 April. All heavy groups, the 5th, 307th, and the Seven Air Force's 494th, participated in these strikes, although much of the 307th Group's effort continued to be directed against Borneo targets. While the heavies concentrated on Davao, partly in the hope of suggesting that town as the immediate objective of an amphibious attack, the Mitchells of the 42d Group from Palawan maintained road sweeps over Highways No. 1 and 5 and the Sayre Highway on each day from 12 April to 20 April.[35] Meanwhile, at Malabang where the attack was scheduled, guerrillas under Col. Wendell W. Fertig early in April secured the town with its airstrip. From positions only 400 yards from the field the Japanese kept the guerrillas under fire, but Marine fighters and dive bombers from Zamboanga maintained consistent pressure on the enemy, flying into Malabang to get instructions from the guerrillas and

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then hitting the Japanese almost immediately after take-off. After ten days of this pounding the Japanese broke through the guerrillas and fled south.[36]

The naval task group, under the command of Rear Adm. Albert G. Noble, had loaded Maj. Gen. Roscoe B. Woodruff's 24th Division at Mindoro and was at sea when information was received from Fertig of the capture of Malabang. In a hasty revision of plan, it was decided to send only one battalion in at Malabang and to make the main landing at Parang in the hope of speeding the drive inland. On R-day, 17 April, after the usual cruiser and destroyer bombardment and under cover of thirty-five SBD's and thirty Corsairs, the assault units went ashore unopposed. Next day, Cotabato was secured by a shore-to-shore amphibious movement, and by 21 April the 19th and 21st RCT's had reached Kabacan, thus cutting off the enemy's 30th Division from contact with his 100th Division.[37]

With Marine fighters and dive bombers sweeping the highways of any potential opposition, General Woodruff did not stop to consolidate at Kabacan but kept his 24th Division driving down Highway No. 1 toward Digos on Davao Gulf, which was reached on 26 April. Meanwhile, Maj. Gen. Clarence Martin's 31st Division had staged through Morotai and reached Parang-Cotabato on 22 April. No definite assignment had been given to the 31st before the operation, but for exploitation of the rapid advance to Davao Gulf, it was moved to Kabacan on 27 April and ordered to go north along the Sayre Highway. By 3 May Kibawe was captured with an airstrip capable of limited use. Forced by gorges and a lack of bridges to leave most vehicles and heavy equipment behind, the troops pushed on until they ran into heavy resistance near the Maramag airstrip. After six days the artillery arrived along with fresh troops, and aided by aerial strikes they broke Japanese resistance on 12 May.[38] Because the rapidly advancing troops had outrun their supplies and outstripped the ability of the combat engineers to maintain communication routes, the 403d Troop Carrier Group took over with air drops and supply-evacuation landings on rough guerrilla strips. Through May and June better than fifteen transport planes a day were scheduled in support of Mindanao operations. C-46's could be used for air drops, but for direct air supply and evacuation, as at Maramag, the old reliable C-47 was used.[39]

At Malabang, meanwhile, Marine air units had moved in and re-

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named the strip Titcomb Field. Beginning on 20 April, the SBD's of Marine Air Group 24 filtered in from their assignment on Luzon, and the SBD's and F4U's from Zamboanga used the field to lengthen their time over target. The Marine PBJ's (B-25 type) of VMB-611, also based at Zamboanga, played an active role in supporting X Corps.[40] Indeed, except for pre-invasion preparation, the aerial role became almost exclusively a Marine show, since Thirteenth Air Force units were supporting the Australians in their OBOE operations. In June, however, during hard fighting in the Davao area, the P-38's of the 18th Fighter Group were frequently called on for napalm strikes—a type of attack the Marines had not mastered as well as they had dive bombing.

After reaching Digos on 26 April, the 24th Division had sent reconnaissance units south to seize Padada airfield and Malalag Bay while the main body advanced north toward Davao, which fell on 3 May. Admiral Doi's naval and marine units retiring north toward Mandug were slowly cut down, but the bulk of the enemy's 100th Division managed to regroup in the Mount Apo–Kibawe–Talomo Trail area. The Japanese 30th Division had retreated east of the Sayre Highway between the Agusan River valley and the Bukidnon plateau. Though separate, the two Japanese forces were compressed in the large and almost impenetrable mountainous area of central Mindanao, where they continued fighting until the surrender in August.[41] The end of organized resistance on Mindanao, however, had been announced by General Sibert on 30 June, and five days later General MacArthur proclaimed an end to the Philippines campaign.

OBOE

In the conquests of Tarakan, Brunei Bay, and Balikpapan the Australians took the lead, with support from the Americans. Tarakan, a small island forming part of the delta area of the Sesajap River in northeastern Borneo, was seized partly for its oil but mainly for its airfield—a strip the Allies intended to use in support of their landings at Brunei Bay and at Balikpapan. Brunei Bay in northwestern Borneo, with the neighboring Seria and Miri oilfields, was of great strategic importance. Situated on the South China Sea approximately halfway between Manila and Singapore, its harbor had served as a major base for the Japanese fleet. Balikpapan, political and commercial capital of

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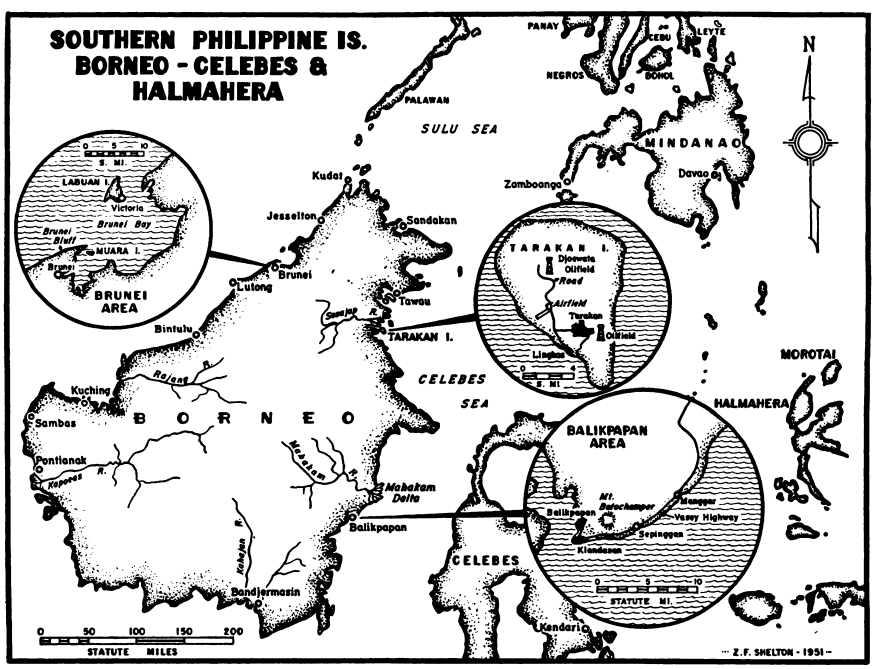
Dutch Borneo, drew its military importance from the oilfields which had served as a target for earlier attacks by SWPA bombers.* Seizure of these points in Borneo also was regarded as a step toward the liberation of Java.

From the air forces' point of view, all of these operations were mutually supporting. The RAAF 1st Tactical Air Force was designated the assault force; XIII Bomber Command under operational control of RAAF Command was to direct heavy bomber operations; and



XIII Fighter Command was to assist by trying to blockade the South China and Sulu seas and by providing initial cover for the ground troops. Other AAF organizations were, of course, on call in the event of an emergency, but as far as possible the show was to be an Australian one. Two B-24 squadrons of the RAAF Northwestern and Western Areas moved to Morotai for operations with XIII Bomber Command, and the ground forces came entirely from the Australian 1 Corps of Lt. Gen. Leslie Moreshead.[42] P-day at Tarakan was set for 1 May.

Attacks on Borneo targets, particularly airfields, had been a part of

* See above, pp. 316–22.

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the air force mission in support of the developing Philippines campaign. In preparation for the Tarakan landing, it was necessary only to step up the rate of attack and to assure adequate coverage of some twenty-five enemy strips lying within staging range of Tarakan—especially Manggar, Sepinggan, Jesselton, Sandakan, Tabuan, Miri, Kudat, Bintulu, Kuching, and Celin. The 5th Bombardment Group, flying from Samar with staging facilities available at Palawan, took care of the fields in western Borneo, on one mission sixteen planes going all the way to Kuching in southwest Borneo for a round trip of 2,540 statute miles. The 307th Bombardment Group at Morotai, aided by RAAF Liberators, concentrated its attention on airfields in eastern Borneo and on Celebes. These attacks, first directed chiefly against installations, equipment, and personnel, were after 25 April primarily aimed at cratering the runways. Specific targets on Tarakan Island—oil storage tanks near the beaches, defensive buildings, gun positions, and supply dumps—were also hit. The 868th Squadron (LAB-24) made regular sea searches of the NEI shipping lanes ranging as far south as Soerabaja on 9 and 19 April. For seventeen consecutive days preceding the landing, the B-25's of the 42d Bombardment Group ranged over Borneo from their base at Palawan, as did the 347th and 18th Fighter Groups from Palawan, RAAF Beaufighters from Morotai, and a squadron of PV-1's of Fleet Air Wing 10, also from Palawan. These planes hit targets specified by intelligence parties previously dispatched to Borneo, flew cover for minesweepers, and laid down smoke to screen beach demolition team activities prior to the landing.[43]

On P-day the pre-landing strike by the Liberators of the 5th and 307th Groups was scheduled to end at H minus 15 minutes, but delayed by very poor weather at the rendezvous point, they requested an additional five minutes which enabled them to secure excellent coverage of the target, even though not all planes were able to bomb. The assault troops (one brigade group of the Australian 9 Division) met only light opposition at first, but it quickly stiffened so that the enemy was not cleared from the area surrounding the airdrome until 6 May. AAF and RAAF fighters maintained a constant air patrol over the beachhead for five days, while B-25's provided direct support for the troops. After the Japanese had withdrawn to elaborate hill defenses, 1,000-pound bombs dropped by B-24's and napalm delivered by fighters proved effective in opening up Japanese positions to ground attack. Although engineering difficulties delayed the arrival

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of the RAAF air garrison until 20 June, that garrison had assumed responsibility for defense as of 16 May by replacing the AAF 347th Group at Sanga Sanga.[44] By June the enemy had weakened, and on 23 June it was announced that organized resistance had ceased.

The delay in getting the air garrison to Tarakan, however, meant that the landing there failed to serve its chief immediate end, support of the landings in Brunei Bay, even though the target date was postponed from 23 May to 10 June because of a delay in bringing the assault forces to the loading point at Morotai. RAAF units at Sanga Sanga operated against Brunei in the period from 5 to 14 June, but after this they had to move to Tarakan. As a result, XIII Fighter Command's planes on Palawan were forced to assume an additional load. For the heavies, preparation for the Brunei landings was a continuation of the Tarakan missions: the 5th Bombardment Group sent its planes down to southwest Borneo while the 307th and RAAF heavies worked over the Brunei area. To supplement this effort, the 90th and 380th Bombardment Groups of the Fifth Air Force joined in the final assault on 3, 5, 8, and 9 June; this made a total of 2,789 sorties flown and 3,450 tons of bombs dropped against Borneo targets between 13 May and 9 June. Over half of these sorties had the tactical function of isolating the invasion area by attacks on troop movements, railroads, barges, and roads to prevent any substantial numbers of Japanese moving overland, east coast to the west coast, from reaching Brunei in time to be effective.[45]

As the covering naval force moved in on Z minus 3 and minesweeping and underwater demolition began, aerial blows were concentrated on the beachhead areas. Fleet Air Wing 10 scouted the South China Sea to spot any possible naval reaction; fighters and night fighters from Morotai, Zamboanga, and Palawan flew cover for the convoys; B-25's operated with PT boats in barge-hunting missions; and RAAF Beaufighters flew interdiction missions inland. With dawn on Z-day, 10 June 1945, the naval bombardment began, and at H minus 35 minutes aerial bombardment by squadron commenced on each of the three beaches, lasting until H minus 15 minutes. Eight Thirteenth Air Force and two RAAF squadrons participated with only one squadron failing to bomb because of a lead bombsight failure. RAAF Command singled out the accuracy of this attack for special commendation.[46]

The 9 Division troops went ashore on Labuan Island, Brunei Bluff,

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and Muara Island at 0915, at all points unopposed. The Muara force found the island deserted; the Brunei force captured Brooketon and advanced rapidly toward Brunei town; and the Labuan force reached the airfield by nightfall. Direct air support was supplied by four B-25's from Palawan (relieved every two hours) until 15 June, after which they were on call at their base until relieved of all responsibility for such support by the 1st Tactical Air Force on 22 June. Brunei town was taken on 13 June; Labuan Island was secured by 16 June. On 20 June another landing was made at Lutong port and by the 25th the Miri and Seria oilfields were captured. The Australians now controlled 135 miles of the northwestern Borneo coast.[47]

The invasion of Balikpapan was the last amphibious operation of the Pacific war; according to the MONTCLAIR schedule, it was to be followed by the invasion of Java but that proved unnecessary. While similar to the other OBOE operations in concept and planning, it proved unique in many ways. It was the third successive operation for the Australian I Corps and the RAAF Command, and the added experience as well as improvements suggested by the other operations caused the whole operation to go off much more smoothly than had the other two. This, despite the necessity to land only one mile north of the town, despite the heavy concentration of dual-purpose antiaircraft guns at Balikpapan, despite the extensive mine fields, and despite the lack of close-in support from Tarakan aircraft. The first difficulty was taken care of by leveling all buildings adjacent to the landing area by high-level bombardment. The second and third were overcome by special squadron bombing of antiaircraft positions prior to 15 June, which allowed minesweepers fifteen days to clear both Japanese and Allied mines from the beaches and channels. The last problem was solved by using three escort carriers for convoy and beachhead cover and by using Liberators on two-hour air alert for direct ground support.[48]

MONTCLAIR had originally made the target date 18 May, but after the decision to seize Brunei postponed the date to 28 June, it was finally set at 1 July. With the coming of June the Fifth Air Force 90th and 380th Bombardment Groups from Mindoro joined the Thirteenth's two heavy groups and the RAAF B-24 squadrons in a sustained effort throughout the month. On 23 June the Fifth's 22d Group (H) and 38th Group (M) moved to Thirteenth Air Force

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bases on Morotai and Palawan to further augment the aerial strength. A Fifth Air Force long-range night fighter squadron moved into Zamboanga to fly night cover.[49]

At first, antiaircraft positions held the highest target priority, but poor weather frequently forced diversion to secondary targets, which slowed the completion of the minesweeping. The continued bombing had a cumulative effect, however, and although all AA positions were not knocked out, the minesweeping was completed on time. Poor weather also hindered the fighter cover supplied during this period from Sanga Sanga, and was an additional inducement to the requisition of three escort carriers for the period F minus 1 to F plus 2. All other aerial commitments were carried out thoroughly, especially the accurate bombing attacks close to shore which shielded the underwater demolition work from F minus 6 to F minus 1. The preassault bombing totals for the Balikpapan area included 726 B-24, 271 B-25, and 238 P-38 sorties for the Thirteenth Air Force; 563 B-24 and 68 B-25 sorties for the Fifth Air Force; and 84 B-24 sorties for the RAAF.[50]

There was the usual pattern of tactical isolation by medium bomber and fighter sweeps of overland routes of communication with Balikpapan and by barge hunts along the coast line. Other heavy missions, particularly in the period F minus 5 to F-day, were flown against airfields within staging range of Balikpapan. The LAB-24's of the 868th Squadron continued their sea searches and at extreme range struck Soerabaja and Batavia, once each. Naval searchplanes covered the South China Sea. On 1 July, after a two-hour naval bombardment and a forty-minute precision attack by a combined striking force of eighty-three B-24's, the assault troops, under cover of a B-25-laid smoke screen, landed at 0855, five minutes ahead of schedule. Direct air support on F-day was provided by B-24's and P-38's. Against Air Marshal Bostock's better judgment, dive bombers from the escort carriers were also used on an F-day mission which unfortunately resulted in some Allied casualties. Later dive-bomber missions were more accurate.[51]

RAAF operations went smoothly. The 1st TAF command post and air support control were established ashore by F plus 2 and fighter control by F plus 3. On 2 July the 18 Brigade advanced across the Klandasan River toward Balikpapan, and the 21 Brigade going north captured the Sepinggan airstrip. By 4 July the town and docks of

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Balikpapan were secured, as well as Manggar airfield. During the rest of July, however, progress was slow in eliminating enemy centers of resistance. Faced with difficult beach conditions, RAAF engineers had arranged for clearing a beach near the Sepinggan strip where their construction troops landed on F plus 6 and began work. Air defense and air support missions were taken over by the 1st Tactical Air Force operating from Tarakan and Brunei before the two Balikpapan fields were ready to receive the air garrison. Thirteenth Air Force heavy bombers continued their direct support role until F plus 7, although the last medium bomber support—by the 42d Bombardment Group—was not flown until 11 July.[52] As the Americans turned their attention northward in preparation for an invasion of Japan, they carried with them a stronger sense of the good will of their long-time Australian allies.

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CHAPTER 16

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CUTTING THE ENEMY'S LIFELINE

AS THE Philippines campaign progressed toward a successful conclusion, Kenney's airmen, still heavily engaged in tactical support of ground and naval forces, assumed new responsibilities that were more nearly those of a strategic air force. The island of Formosa, from which the Japanese had launched their first attack on Clark Field in December 1941, was a key position in the Japanese Empire. Situated halfway between Japan and the southern extent of its military conquests, the island was the principal way-station along the routes leading from the homeland to the Netherlands East Indies and Malaya. In addition to guarding vital sea lanes, Formosa served as a staging and supply base for outlying garrisons and, from its own economic resources, contributed importantly to the maintenance of Japan's home front. To protect U.S. forces in the Philippines and Ryukyus, it was necessary to neutralize the many Formosa airfields, but the sustained air attack launched in 1945 served an even larger purpose and was joined with efforts to interdict Japanese shipping in the South China Sea. In time, targets on the China coast also came under attack.

That purpose was to speed the enemy's collapse by cutting his lifeline. In retrospect, the contribution to the achievement of that end made by the Fifth Air Force does not loom so large as it did in the eyes of its commanders at the time. It is now clear that submarines of the U.S. Navy already had gone far toward choking off the sustenance received by Japan from her southern conquests by the time the Fifth Air Force was in position to render major assistance, and the underwater blockade of Japan was to continue with increasing effectiveness.[1] By the spring of 1945, moreover, the B-29's of the Twentieth Air Force were adding their own significant contribution to the blockade of Japan through highly effective mine-laying opera-

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tions in Japanese home waters. At the same time, the B-29's were more heavily engaged in their primary mission, the destruction of Japanese industrial plants and cities. Blockade and bombardment were complementary but imperfectly coordinated methods of attacking the enemy's war production: in some industries it was lack of raw materials, in others loss of factories, that led to a decline, and in some instances there was a duplication of effort.

Much of the postwar debate over the relative credit for Japan's defeat that should be assigned to the several arms and services is beside the main point. That point, clearly, is that the United States and its allies, while destroying a major foe in Europe, had at the same time assembled and deployed in the Pacific air, land, and sea forces of such magnitude as to leave the Japanese no escape from an early defeat. And among those forces none was more experienced or battle-wise than Whitehead's Fifth Air Force, which in assuming its new responsibilities demonstrated once again its own and air power's extraordinary flexibility.

Formosa

With the single exception of Manchuria, Formosa was the most highly developed of the Japanese possessions. An island 249 miles long, it enjoyed the advantages of a subtropical climate for the production of sugar cane and its by-product alcohol. Many of its sugar refineries had been converted during the war to production of butanol, a hydrocarbon used in the manufacture of aviation gasoline. Electrical power plants in the mountainous backbone of the island were tied to the production of perhaps 10 per cent of Japan's aluminum. Iron, copper, and salt, together with oil refining, rounded out the island's industrial contribution to the Empire. Takao, Formosa's leading city, boasted well-developed port facilities, as did Kiirun in the north. Two main railway lines, on either side of the central mountains, connected the north and south.[2] Along the eastern and western coastal plains the Japanese had developed an airdrome system superior to anything found outside the home islands: photographic intelligence in the spring of 1945 showed a complex of some fifty strips, of which the chief were located at Heito, Tainan, Okayama, Matsuyama, and Takao.[3]

By that time, of course, Formosa had become an old target for U.S. planes. Though in December 1941 the AAF had been frustrated in its

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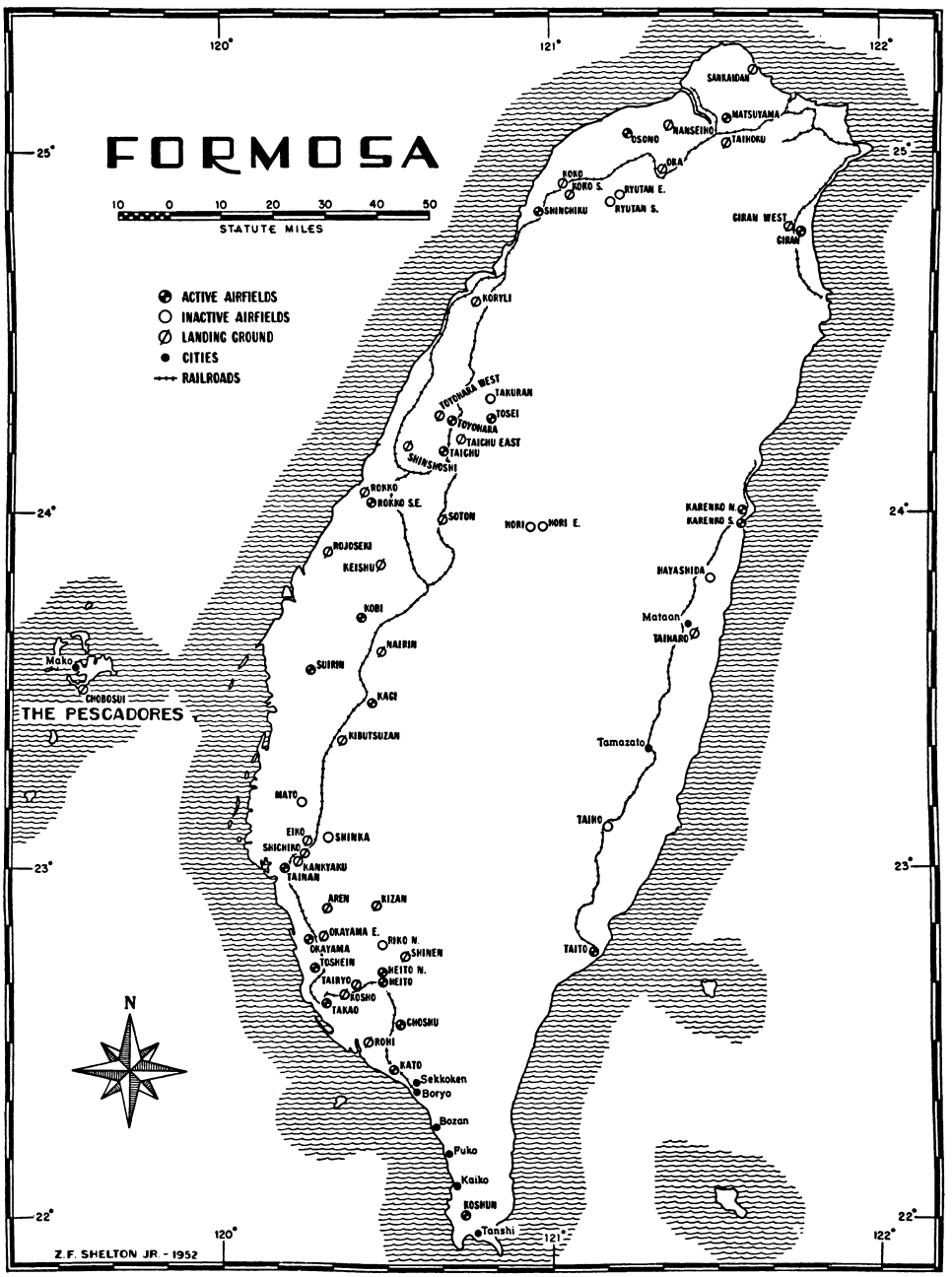

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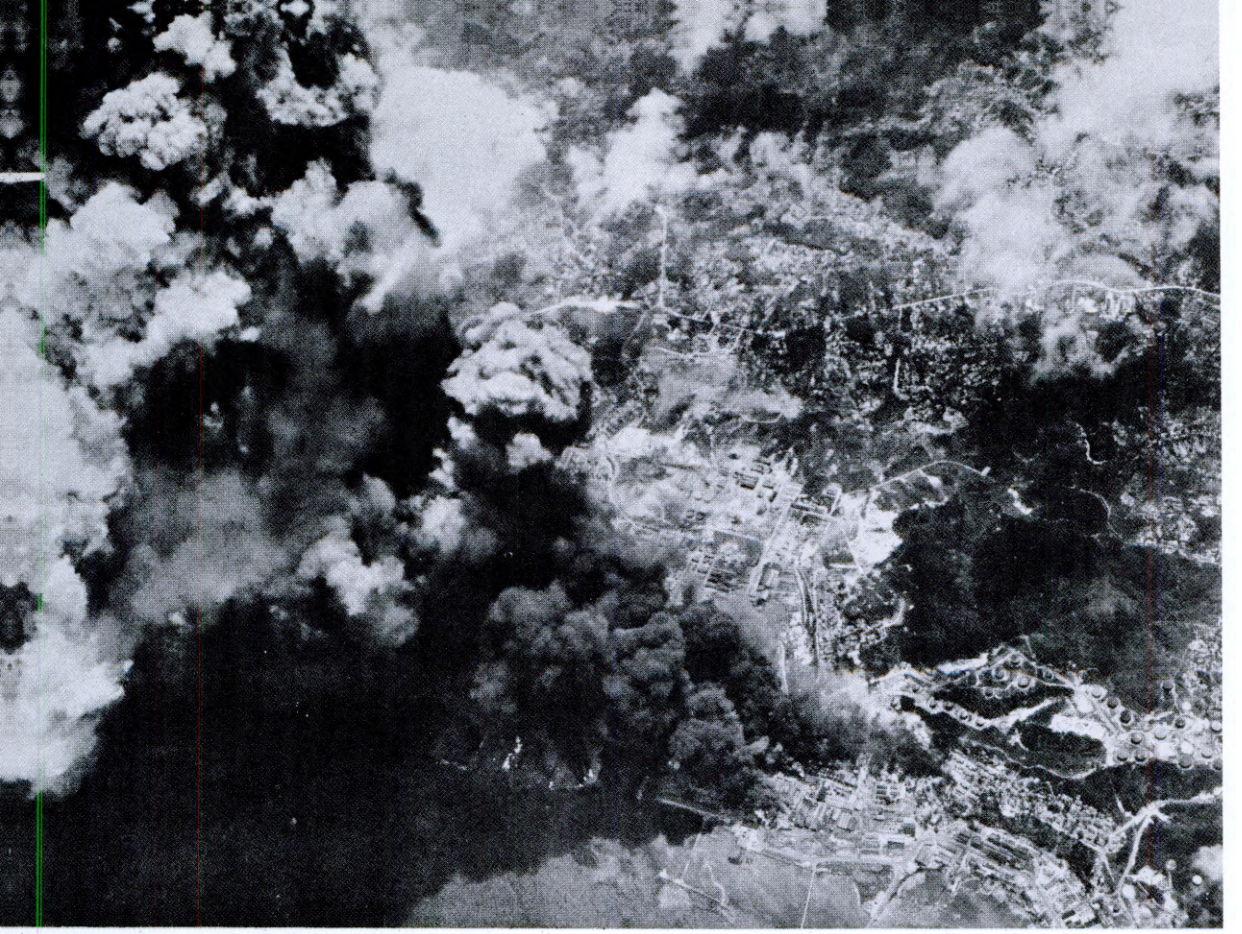

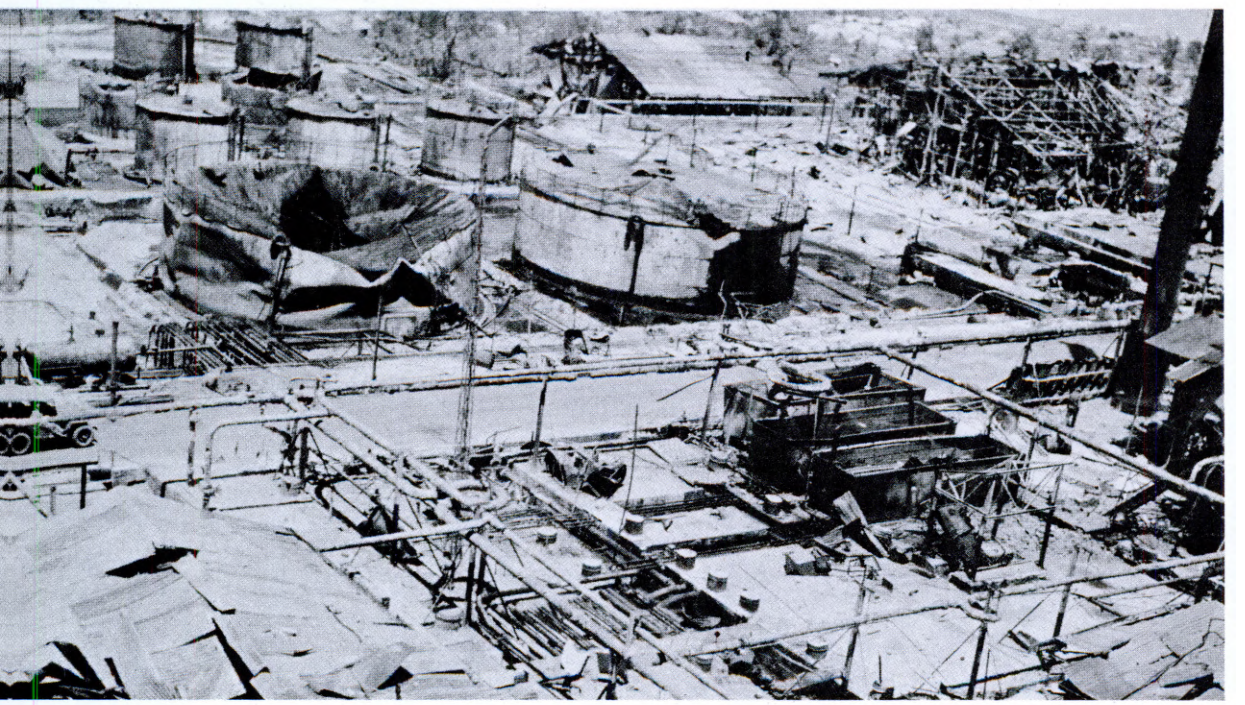

BALIKPAPAN

Above: Attack by Thirteenth Air Force B-24's *Below:* Damage to Cracking Plant

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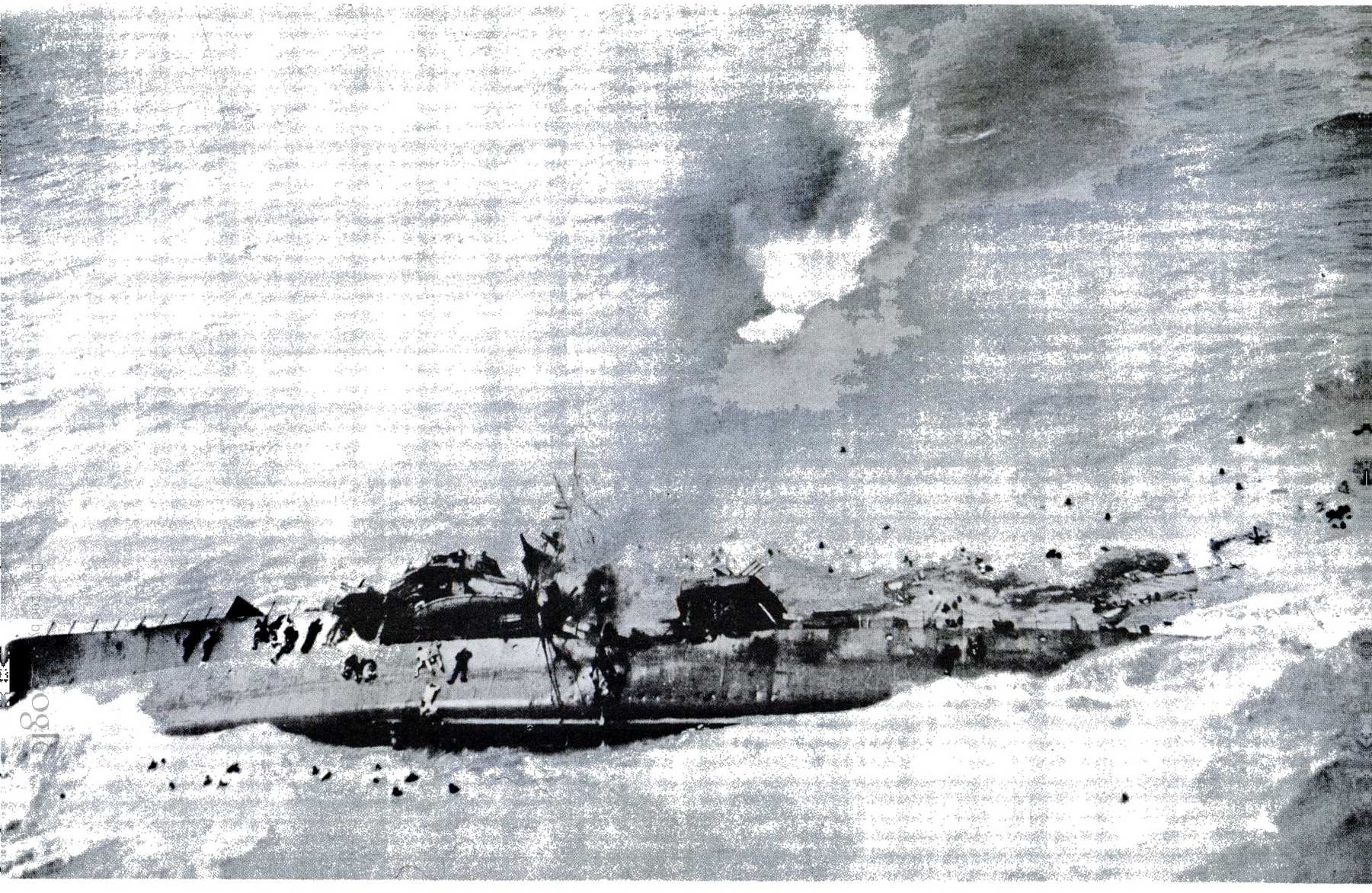

B-25'S OF THE 345TH BOMBARDMENT GROUP SINK FRIGATE NEAR AMOY, 6 APRIL 1945

plan to meet Japanese aggression with a counterattack on Formosa from Clark Field* and soon had been denied bases within reach of Formosa by the rapid development of Japan's southward thrust, Chennault's Fourteenth Air Force from its Chinese bases had begun photo-reconnaissance of the island early in 1943 and followed with a series of harassing attacks before the year was out. With the loss of the east China bases during the latter half of 1944, these attacks had to end, but in the autumn of that year both XX Bomber Command and Halsey's Third Fleet struck hard at Formosa targets. In support of the landings on Luzon, the two forces had again joined in attacks on Formosa, and the Navy had carried its effort with devastating effect into the South China Sea.†

Effective as was Halsey's neutralization of the enemy's capacity to interfere with the Luzon landing, there remained the task of keeping Japan's Formosa-based forces under control—a task best suited to the capabilities of land-based aviation. The assignment belonged naturally to the Fifth Air Force as the Sixth Army's partner in the seizure of Luzon, an operation which had found part of its justification in the assumption that the Fifth Air Force would cover Formosa in conjunction with the April invasion of Okinawa. Fifth Air Force leaders, who had been restrained in their use of heavy bombers out of concern for the protection of the Filipino people, responded vigorously to the opportunity.[4] Because of shortages of shipping, engineers, and materiel, GHQ refused to indorse AAF plans for the development of heavy bomber bases north of Clark Field,[5] and only two of Whitehead's four heavy groups would be based at Clark in time, but a successful campaign against Formosa did not depend upon acquiring the new bases.

The campaign began in a small way in January, when most of the bombers were still flying from Tacloban and a few from the new bases on Mindoro. On the night of 11 January the first mission was flown to Heito from Tacloban by two of the 63d Squadron's Seahawks and an H2XB-24.‡ One plane turned back with an engine failure, but the other two bombed the storage, fuel dump, and administration areas, starting fires visible thirty miles away. Two more planes were back over Heito on the night of 12 January, and the

* See Vol. I, 203–12.

† See above, p. 415.

‡ Equipped with high-altitude radar bombsight devices, ten H2XB-24's had been attached to the 63d Squadron on 7 January for training in night missions.

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next night 3 planes dropped 500-pounders and incendiary clusters.[6] Okayama airdrome was the target for the period from 14 to 21 January. On 16/17 January a trained crew in a specially equipped B-24 ran the first of a series of anti-radar reconnaissance, or ferret, missions over Formosa.[7] While on 21 January Fifth Air Force fighters opened up on Formosa with a fighter sweep from Luzon and the heavy bombers began daylight bombardment on 22 January, the night bombers switched their attention to the city of Takao and its Nippon Aluminum Company. Airdromes were again the primary target on the nights of the 27th and the 29th.[8]

Though the missions were still flown in small force, the hazards were great, as may be shown by the experience of one of the three 63d Squadron planes over Takao on the night of 30 January. First Lt. Albert J. Goossens' plane, second over the target, was picked up and held by searchlights in its bomb run over the tank farm. The bombs hit the target, starting four fires which soon merged into one huge blaze, but no sooner had the load cleared the plane than an anti-aircraft shell exploded in the open bomb bay. The doors had just been closed when a second shell tore through them, and another ripped the cowling off No. 3 engine. Then, just as the damaged plane began to pull away from the target, it was jumped by seven Japanese night fighters attacking from the rear and sides. The tail gunner, S/Sgt. Charles F. Trusty, exploded one plane before he was wounded by a 20-mm. shell. S/Sgt. Bruce H. Willingham, one of the waist gunners, dragged Sergeant Trusty into the waist, took over the tail turret, and exploded a second Jap plane. The other waist gunner, S/Sgt. Willard W. Ogle, manned both waist guns until he was wounded in the arm. Sergeant Willingham came back and dressed the wound, then returned to the tail turret where he scored hits on a third Japanese night fighter. Meanwhile, Lieutenant Goossens had taken the plane down to the protection of a cloud layer at 1,000 feet, but just before entering it, a last Japanese burst hit the No. 4 engine. Although the engineer shut off the fuel supply to the engine, it was leaking oil and would not feather. The hydraulic system and automatic pilot had been shot out; there were holes in both wing flaps and in the left vertical stabilizer; the main gas tank in the right wing had been punctured; and although the crew did not yet know it, the left landing-wheel tire had been punctured and the brakes shot out. The plane was safe from fighters in the cloud layer, but the wind-

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milling No. 4 engine, now without oil, began to heat up and fire broke out on the right wing. Fortunately, the engine heat melted the nose section and the entire propeller section spun off the shaft clear of the plane; after about twenty minutes the fire burned itself out. Contacting the newly captured Lingayen airfield, the pilot received permission to land but had to wait out a Japanese air raid. After cruising off the coast, the crew spent another thirty minutes manually lowering the damaged flaps and landing gear. Guided in by a searchlight beacon, they discovered the damage to the landing gear when the wheels touched and the plane slewed sharply to the left with one wing clipping the tails off two parked B-25's. Lieutenant Goossens and 2d Lt. Charles D. Phippen, the co-pilot, managed to strong-arm the plane back on the runway and into the sand at its end. After the two wounded gunners were sent to the hospital, the rest of the crew, as the squadron historian reported, sat down with hot coffee to congratulate their pilot and their ship, and to contemplate the solid earth beneath them.[9]

For the next two weeks airfields remained the primary target. Whenever the undercast was too thick over the airdromes, the night bombers would return for radar or ETA bomb runs on Takao, where the extensive development almost guaranteed damage to the Japanese. Kagi, Okayama, Tainan, Heito, and Reigaryo near Takao were hit repeatedly. On 12 February the 63d Squadron was returned to its favorite target—Japanese shipping. Later its planes occasionally undertook nightly harassing attacks on Formosa airfields, chiefly during the invasion of Okinawa. The 90th Group's H2XB-24's were on their own after 3 February. They continued night missions against Formosa targets but were also increasingly used as pathfinders on daylight missions. Toward the end of February more H2XB-24's arrived in the theater and were assigned to fill the pathfinder role in the 43d, 22d, and later the 380th Bombardment Groups. In addition to their pathfinding in bad weather and nightly harassing of the enemy, these bombers provided valuable weather information for the daylight attacks.[10]

The opening of the daylight attacks on Formosa had been beset with difficulty. Whitehead had originally planned to open the attack on 16 January with two groups of B-24's and one group of B-25's covered by P-38's, but bad weather and slow progress on the Mindoro airfields plus the demands of Luzon ground support forced cancella-

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tion of both this attack and one scheduled for 19 January. A similar attack was planned for 21 January with the 22d Bombardment Group's Liberators flying from their new base on Samar under cover of P-38's from Mindoro. The Liberator part of the mission was scratched, however, when on take-off the plane of Col. Richard W. Robinson, the 26-year-old commanding officer of the 22d, hit a parked Corsair and crashed at the end of the runway killing all the crew.[11] This was a sore loss, for Robinson was one of the finest combat commanders developed in the Fifth Air Force. The 8th and 49th Fighter Groups sent their nearly eighty P-38's on for a sweep of southern Formosa, where they met no opposition whatsoever. The Third Fleet's carriers had struck earlier that morning, and the P-38 pilots brought back convincing testimony to the effectiveness of this attack.

Finally, on 22 January the first heavy bomber daylight attack on Formosa was carried out by the 22d Bombardment Group. Covered by forty-nine P-38's, again from the 8th and 49th Groups, the bombers dropped over one hundred 1,000-pound bombs on Heito air base with good effect. Although antiaircraft fire was heavy, only one plane was damaged and there was no interception.[12] Still, the reduction of Corregidor* kept attacks on Formosa down to occasional strikes by one or two groups of the heavies. After the airborne landing on Corregidor on 17 February the way was clear for a sustained assault on Formosa. In the development of that assault the heavies were joined by mediums and fighters, with the heavies taking care of the better defended targets—the major airfields, towns, and industrial plants. Medium bombers and fighters were assigned the smaller and less well protected airfields and isolated industrial plants. Bad weather often protected the northern end of the island, but southern Formosa took a heavy beating.

Throughout the campaign Japanese airfields continued to receive the major share of the Fifth Air Force attack. The second daylight heavy bomber attack had been run on 29 January from McGuire Field on Mindoro† by the newly emplaced 90th Bombardment Group

* See above, pp. 430–34.

† The field was first named for Col. Gwen G. Atkinson of the 58th Fighter Group who was shot down over Luzon, but when guerrillas returned him alive and healthy, the newly constructed field on Mindoro was rededicated McGuire Field in honor of Maj. Thomas B. McGuire, Jr., of the 49th Fighter Group. McGuire, one of the best-liked and -respected pilots in the Fifth Air Force, was within two planes of Bong's record of forty enemy planes destroyed before he himself was lost in action.

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which put eighteen of the "Jolly Roger" Liberators over Heito. Fifteen to twenty enemy fighters from Takao were driven off by the escorting P-38's before any interception was attempted, but flak damaged six bombers. The 90th Group returned to Formosa on 31 January, on 1 February, and again on 7 February.[13] While the heavies concentrated on Corregidor, the 38th Group's B-25's gave the Japanese at the Kagi airdrome a taste of low-level bombing and strafing on 13 February. With their commitments on Luzon eased, two heavy groups were slated for Heito on the 17th but bad weather diverted them to Takao. The 380th Bombardment Group had just completed its move from Darwin to Mindoro, and it joined the parade to Formosa on 18 February, when Brig. Gen. Jarred V. Crabb staged all four of V Bomber Command's heavy bombardment groups and one medium group for a full-strength strike. Three heavy groups had Okayama as a primary target, but only one bombed there while the others hit Takao. Twenty-five B-25's of the 38th Group made a very destructive low-level attack at Koshun. The next day clouds again protected Heito so that two of the three heavy groups hit Koshun and Takao instead. The 22d Group was badly off target in its bombing of a new landing strip south of Heito.[14]

Missions to Formosa were run on a smaller scale for the rest of February while the main weight went to ground support in the Fort Stotsenburg, Ipo dam, and Balete Pass areas of Luzon. On 2 March, however, the Fifth Air Force returned in strength to attack Formosa airdromes. Twenty-four Liberators of the 90th and four of the 380th went to Matsuyama to unload 500-pound frags on dispersal and landing areas; 35 Mitchells of the 345th Bombardment Group dropped 23-pound parademos and strafed Toyohara airdrome; and 36 planes of the 38th gave the same treatment to Taichu. The A-20's of the 312th Group, in their first appearance over Formosa, could not find Kagi airdrome but hit a small drome at Shirakawa and other targets of opportunity, including warehouses, locomotives and boxcars, two bridges, and one truck. Heavy weather interfered on 3 March: the 90th Group bombed Kiirun harbor by radar; the 22d Group found Tainan airdrome cloud-covered but visible from the north, so that bombs had to be released on an estimated bomb run with unobserved results. Finding Kagi (the primary) and Hosan (the secondary) closed in, mediums of the 38th Group hit the tertiary, Basco drome on Batan Island.[15]

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Poor weather and ground support missions kept Formosa airdromes safe until 16 March when eighty-six B-24's from all four of the heavy groups split up the job of plastering the enemy's air bases. The next day, four groups put out 70 Liberators to blanket Taichu, Toyohara, Shinchiku, and Tainan airdromes with 500-pounders. The cloud cover made radar runs necessary for almost all of the bombing and forced a scratching of planned low-level attacks. Forty-six heavies followed up on 18 March at Tainan, Koshun, and Toko. Poor weather over other airdromes resulted in Tainan and its airdrome receiving the undivided attention of seventy-seven Liberators on 22 March. Tainan again on the 28th was bombed by twenty-four planes diverted from their primary, Okayama. On the last day of March twenty-three heavies of the 22d Group blanketed Matsuyama with twenty-pound fragmentation bombs.[16]

The estimate of Japanese planes on Formosa airfields had dropped from 601 on 14 January to 375 by 1 April. But with the invasion of Okinawa scheduled for that date, the Fifth Air Force had continued to hit the fields regularly both day and night, and though most strikes after 1 April were made in smaller force than were the big raids of March, enemy air continued to be the target of over 50 per cent of the effort devoted to Formosa through April. On 1 April Giran airdrome was bombed by thirty Liberators of the 43d and 22d Groups; eighteen Mitchells of the 38th Group assisted the heavies by working over Karenko airdrome the same day. On the 3d Kagi airdrome was attacked by one heavy and one medium group using frag bombs and another group hit Toyohara on 4 April. Three groups were out on the 7th and four on the 8th, despite bad weather. Tainan, Kagi, and Okayama were hit but many of the planes, closed off from their airdrome targets by the thick undercast, dropped on targets of opportunity. In repeat raids which must have been very discouraging to Japanese repair crews, three heavy groups were out on 11, 12, and 14 April bombing Tainan, Takao, Okayama, Kagi, Taichu, and Toyohara airdromes. The pattern was repeated on 15 April with Toyohara, Shinchiku, and Shinshoshi airdromes on the receiving end. Again on the 16th, 3 heavy groups attacked Matsuyama airdrome and aircraft parked in nearby Taihoku with 100-pound frag bombs. The same day the 380th Group hit Giran airdrome while the two medium groups, the 345th and 38th, each sent eighteen B-25's to work over Nanseiho and Osono airdromes in northern Formosa, strafing targets

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of opportunity on the return trip down the length of the island. Four Liberator groups on 17 April bombed Taichu, Shinshoshi, Toyohara, and Shinchiku, with 18 "Sun-Setters" (38th Group) dropping 100-pounders on Taito airdrome.[17]

By 26 April the estimated plane count on Formosa had dropped to eighty-two, of which not more than 20 per cent were thought to be operational on any one day. For some time now there had been few enemy raids on Luzon air bases or on resupply shipping in Lingayen and Subic bays, and interception of U.S. planes over Formosa had become almost a thing of the past. Except for still potent antiaircraft defenses, Fifth Air Force planes enjoyed freedom of the air over Formosa. Consequently, toward the end of March, airfields had been replaced by industrial targets as first priority among Formosa targets.[18]

During the last half of April POA forces at Okinawa, beset by *kamikaze* attacks, demanded heavier attacks on Formosa airfields on the assumption that those fields were the principal source of this new and dangerous form of attack. Fifth Air Force intelligence officers disagreed, arguing that Japanese air power on Formosa had been reduced to such impotency as to require only occasional attention and that the *kamikaze* attacks against Okinawa shipping were flown from Kyushu. Postwar investigation has proved both parties to have been right. It was true that most of the *kamikaze* attacks were flown from Kyushu, with approaches which deceived U.S. naval commanders as to the point of origin. But it was also true that at least 20 per cent of them flew from Formosa.[19]

This confusion of U.S. leaders is explained in part by the enemy's effective use of dispersal and camouflage on Formosa. By February 1945 it had become evident to Japanese air commanders that the Philippines were lost, and early aerial battles over Formosa had also shown them that an attempt to dispute control of the air would only result in their being quickly defeated. Consequently, they had decided on conservation of their aircraft for *kamikaze* attacks in order to repel an invasion of either Formosa or Okinawa. In February they had ordered flying discontinued between the hours of 0700 and 1600, when Allied aircraft were most likely to be over Formosa airfields. Although interceptors were used to pace bomber formations for the purpose of furnishing range and altitude information to the antiaircraft guns, aggressive interceptions were permitted only infrequently.[20] Planes were widely dispersed, often towed miles from the

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airstrips and in one case ferried across a river; some planes were even partly dismantled and others, well camouflaged, were parked in scattered villages and towns. Many dummy airplanes and even entire dummy airfields were constructed. The frequent cloud cover over northern Formosa, which often prevented Allied observation, enabled the enemy to move operational planes from airfield to airfield. While Allied intelligence officers were aware of the Japanese dispersal program (a number of missions were run against Japanese planes parked between houses in towns and villages), they did not think it as thorough as it was. At a time when they estimated only 89 planes, the Japanese had approximately 700; the "twenty per cent operational on any one day" estimate was approximately correct.[21]

As a result of these measures, the Japanese 8th Air Division was able to send from Formosa against Okinawa shipping approximately 240 sorties, of which the Japanese estimated 140 to 170 were successful. The XXIX Naval Air Corps (a consolidation of remnants of the First and Second Air Fleets) flew 135 suicide missions from Formosa of which 81 were reported as successful. To avoid detection by the naval radar screen and also because of the difficulty of getting more planes together at any one time, the usual number sent out on *kamikaze* missions was four to six planes accompanied by one or two escorts and reconnaissance planes. The escorts returned unless shot down by U.S. Navy fighters, but the *kamikazes* were committed to a one-way trip.[22]

GHQ had directed compliance with the Navy's request for increased attention to enemy air on Formosa, and the Fifth Air Force itself found reason to retract its original opposition. During May and June photo reconnaissance revealed that planes previously listed as unserviceable had been repaired, that additional dispersal fields were under construction, and that operational planes frequently shifted from one field to another.[23] Though the conclusion that some of the suicide attacks originated on Formosa was inescapable, the continuation of group strength missions against such widely dispersed targets, in accordance with Admiral Halsey's wishes,[24] was regarded as an unnecessary waste of effort that could be profitably employed elsewhere. Wherever concentrations showed on Formosa airfields, the heavies responded in force, as when eighty-four Liberators on 15 June blanketed the airdrome at Taichu with frag bombs. Meanwhile, LAB and H2X bombers went out nightly in strengths of from four to ten

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planes to heckle and break up enemy preparations for suicide attacks —an effort which was probably more effective than any other form of attack employed. The great distance from Mindoro and the lack of airfields in northern Luzon, together with the persistently unfavorable weather over northern Formosa, made difficult the maintenance of any closer supervision of enemy activity. Attacks were begun, however, on enemy air bases on the China coast, which the Fifth Air Force believed to be a source of *kamikaze* attacks, and strikes against Formosa fields were continued. There was a sustained sequence of airdrome strikes, for instance, in the period from 5 through 11 July undertaken in response to a special request from the Navy. By the end of that month the plane count on Formosa had dropped to sixty-six.[25]

In the early phases of the Formosa campaign, when the main effort of the heavy bombers was directed against airfields, the night bombers regularly searched Formosa harbors for shipping or dropped incendiaries on docks and warehouses. Frequent antishipping sweeps were run along the east and west coasts of Formosa by flights of from six to twelve medium bombers, and fighters on escort duty often made strafing runs along the coast before heading for home. In a low-level attack on shipping in Mako harbor on 4 April twelve B-25's of the 345th Group claimed destruction of or damage to six merchant vessels. The first daylight heavy bomber strike against harbor installations had been run by twenty-one Liberators of the 90th Group against Takao on 27 February.[26] The oil storage tanks and installations of the large Japanese naval base at Mako were blasted and fired with 1,000-pound bombs in missions by B-24's on 13, 14, and 15 March. On the night of 24/25 March the radar B-24's stretched their night bombing to include the docks and shipping installations at Kiirun on the northern tip of Formosa. On the next night, while the night bombers heckled Kiirun, nineteen heavies hit the docks at Takao. Kiirun was hit in a daylight attack for the first time by eighteen Liberators on 29 March. Thirteen planes followed up on 31 March, 38 on 5 April, and a force of 102 Liberators on 19 May dropped loads varying from 2,000-pound bombs for buildings, docks, and storage areas to 100-pounders for small shipping in the harbor. That shipping received further attention on 16 June when the heavies dropped 260-pound fragmentation bombs fuzed to explode on contact with the water in a successful test of the theory that small

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vessels might thus be holed at the water line. By 1 July the damage accomplished at Kiirun seemed to justify shifting the night bombers back to the Mako naval base.[27]

An example of the many missions flown against smaller installations was that against Koshun on 18 February, when 24 Mitchells dropped 250-pound parademos on warehouses and barracks with excellent results. On 19 February twenty-two Liberators dropped sixty-three tons of frags on similar targets at Koshun, while fifteen heavies dropped frags on toxic-gas storage tanks at Hozan with excellent results. On 31 March twenty-six A-20's of the 312th Group dropped parademos and napalms on barracks and tents of the Saiatau military camp and gave the area a thorough strafing. On 30 April 42 Liberators dropped 1,000- and 250-pounders on the oil storage tanks at Toshien with very satisfactory fires resulting. Through an undercast on 2 June the Hozan poison-gas storage was treated with 1,000-pounders by 45 Liberators. Twenty Liberators celebrated Independence Day by dropping frags on the barracks areas at Toshien, and on 12 July 26 others used 500-pounders against the oil storage at Toshien.[28]

Approximately 7 per cent of the Fifth Air Force's attacks on Formosa was devoted to its railroad system—locomotives, freight and passenger cars, tracks, bridges, tunnels, marshalling yards, and repair shops. Only rarely did the heavies bother with these targets, but medium bombers weathered out of a primary target or fighters which had fulfilled their escort assignment worked to good effect.[29] Marshalling and repair yards were frequently attacked by night bombers, and in June even the very heavy B-32 experimented with high-altitude attacks against bridges, unhappily without success.[30] Twelve B-25's in a low-level attack had shown how bridges should be destroyed on 15 February when they knocked out the north end of the Sobun River railroad bridge and the adjacent concrete highway span with 1,000-pounders. But the heaviest damage to the rail system resulted from strafing of rolling stock by fighters.[31]

The high point in the attack on rail transportation was reached during the last half of May 1945. Of the approximately 240 low-level B-25 sorties sent against Formosa in that month, over 85 per cent was directed against marshalling yards, railway stations, and bridges. At the same time V Fighter Command kept its planes working over tracks and equipment between stations. The Marines got into the

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show on 26 May when four PV-1's of Fleet Air Wing 17* scored rocket hits on the mouth of a railroad tunnel and damaged rails and freight cars south of Koryu. The 49th Fighter Group got 4 locomotives and 8 cars with an estimated 150 to 200 passengers on 27 May, and P-51's of the 1st Air Commando Group from Laoag destroyed 2 engines and damaged boxcars on the following day.[32] By June the Japanese were operating their trains only at night, and desertions of native laborers forced use of military personnel to move even essential civilian freight.[33]

Among the most damaging attacks on industrial targets were those against the island's main source of electric power, two plants in the mountains of central Formosa. Four heavy groups were scheduled to hit these plants on 13 March, but heavy cloud cover forced resort to secondary targets by all save sixteen planes of the 90th Group; they bombed by radar with unobserved results except for an encouraging column of black smoke. Ten days later, however, twenty-three Liberators of the 22d Group dropped ninety-two 1,000-pounders on the penstocks and transformer yard of one plant while fourteen B-24's of the 43d Group unloaded fifty-five 2,000-pound bombs on the other. The numerous direct hits on vital points cut off 60 per cent of Formosa's power for the rest of the war.[34] Fifth Air Force attacks had already damaged the power station at Mompaitan, burned out another at Keiko, and hurt steam power plants at Hokobu and Takao. Except for Taichu, none of the principal cities and towns on Formosa had power through the summer of 1945, and Taichu was the only city that did not suffer from loss of water supply through damage to its water and pipe systems. The significance of these attacks is indicated by the fact that three industries, the Japanese Aluminum Manufacturing Company of Takao, the Asahi Electro-Chemical Plant at Takao, and the Kiirun factory of the Taiwan Electrical and Chemical Manufacturing Company, had previously consumed 60 per cent of the electrical power on Formosa.[35] It is true that shipping shortages already had cut seriously into the production of these plants by denying them necessary raw materials and that the plants themselves already had been damaged by bombing and were slated for further destruction. But by the late spring of 1945 it was becoming a not uncommon practice for U.S. forces simultaneously to deny the materials

* This unit, awaiting redeployment to the United States, had been assigned to V Bomber Command until movement orders came through.

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of life to the enemy's industrial plant, to destroy the plant itself, and to cut off its power.

It was known that the Japanese had had large-scale projects for production of alcohol and butanol (for aviation gas) which depended in part upon the widely scattered sugar mills of Formosa.[36] Consequently, air attacks against Formosa sugar mills and alcohol plants were the most persistent of any phase of the Formosa attack except those directed toward neutralization of enemy air power. Not too heavily defended by antiaircraft in the early phases of the campaign, these targets went chiefly to the medium bombers, after eighteen A-20's of the 312th Group on 25 March 1945 had begun the raids by burning out, among other targets, an alcohol plant at Kyoshito. Four days later 18 of the Havocs flamed the entire area of the sugar refinery at Eiko with napalm and demolition bombs while 16 B-25's dropped 250-pound parademolition bombs throughout the oil refinery and power plant at Byoritsu.[37] A sweep by seventeen Mitchells on 30 March exploded and burned two small factories at Toyohara. Two locomotives and a string of freight cars received a treatment of 250-pound parademos as the formation went on to fire sugar refineries at Kori and Tenshi, as well as a refinery and barracks area at Taichu. A most destructive attack by the Havocs of the 312th Group against the sugar and alcohol plant at Shinei followed, and on 4 April the attack bombers fired the entire factory area at Suan Tau. A sweep on the 11th by thirteen of the 38th Group B-25's got the Tsan-Bun plant. These targets had proved so explosive that the number of planes assigned to a particular mission was gradually cut down. The sugar and alcohol plant at Hokko was badly damaged on 23 April by nine B-25's; the plant at Mizukami was considered knocked out of commission by seven Havocs the next day; and on the 25th five A-20's of the 3d Group did the same for the Taito sugar refinery. Eighteen B-25's plastered the Heito sugar refinery on 26 April, and the same number of Mitchells worked over the Koshun alcohol plant and Koshun town with thirteen tons of 23-pound frags on the 28th. The alcohol plant at Taito was hit by five Mitchells on 5 May while six others hit the sugar refinery at Shoka. The Marines joined the attack with four PV-1's rocketing the butanol plant at Kagi on 11 May. Flying now in two- or three-plane attacks, B-25's hit the Byoritsu alcohol plant on 13 May, the Kizan plant on the 14th, the Shoka alcohol plant on 15 May, and on 16 May the Mataan, Ensui, and Shinei plants.

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Through the rest of May 19 plants were hit, and on 3 June two B-25's hit the Sharoku alcohol plant while 24 Mitchells gave a full treatment to the Getsubi sugar refinery with 500- and 250-pounders.[38]

The increasing weight and accuracy of Japanese antiaircraft around these plants led to a shift in tactics in June, with the very heavy and heavy bombers participating for the first time. Two B-32's dropped sixteen 2,000-pounders through clouds on the sugar mill at Taito on 15 June. On the 22d one of two B-32's scored with 500-pounders on the alcohol plant at Heito, but the other missed flak positions with 260-pound frags. The same day 34 B-24's hit the oil refinery and flak positions at Toshien: 3 heavy gun positions were silenced by the frag bombs from 23 planes of the 22d Group while 11 planes of the 43d Group scored hits with 1,000-pounders on the cracking plant. From 26 to 30 June three heavy strikes damaged refineries and butanol plants at Tanchi, Keishu, and Heito. In July several single-plane attacks were made by the heavies with little damage observed, the final mission being run on 12 July by the new planes of the 3d Group as nine A-26's heavily damaged the Taiharo sugar refinery.[39]

In all, some thirty sugar refinery-alcohol-butanol plants were attacked—all the known plants in Formosa. The USSBS survey team credited the effort with destruction of at least 75 per cent of the island's alcohol production. The report of the Japanese Governor-General's Office listed seventeen plants completely destroyed, nine moderately damaged, and four slightly damaged. Still further reduction of the enemy's potential supply was attributed to the disruption of rail transportation and a forced conversion from cane to rice crops in an effort to make Formosa self-sufficient in food supplies.[40]

So many of the significant targets on Formosa were situated in the island's cities and towns that area bombing was frequently employed. The resulting destruction, it was assumed, not only would reach supplies of military importance and many small industrial units, but would impose upon the enemy, through destruction of housing and municipal services, a serious loss of labor. Such operations were looked upon also as preparatory to later attacks on the Japanese homeland. The missions were used to experiment with different types of bombs and fuzings and with the tactics best suited to a variety of objectives.[41] The cities became a favored secondary target for planes weathered out of their primary target, as on 20 February when sixty-three B-25's

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bombed and strafed Choshu town. On 24 and again on 26 February, Takao received the attention of a total of 67 heavy bombers and a mixed load of 1,000-pounders, 500-pound general purpose, and 500-pound incendiary bombs. Tainan was virtually written off the target list after a series of attacks in March. On 1 March, 44 Liberators dropped 387 x 500-pound incendiaries squarely on Tainan, which on 12 and 13 March was to receive a total of 84 x 1,000-pounders. On 20 March a formation of 35 B-24's finished the job with a load of 260-pound frags, 100-pound napalms, and 100-pound incendiaries, burning out the military barracks and housing area in the northern half of the city. Tainan was hit occasionally as a target of opportunity thereafter, but it no longer offered targets for mass raids. Takao, a good or bad weather target, was on the receiving end of 1,000-pounders dropped by radar and carried by 22 B-24's on 24 March and 24 on the 28th. Shinchiku city got identical treatment from sixteen heavies on the 17th. Koshun town received the unorthodox bomb load of 100-pound frag clusters on 10 April from 23 Liberators weathered out of Tainan airdrome. The Mitchells of the 38th Group began attacks against the smaller towns in April, hitting Kagi, Hokko, and Shoka.[42]

In these attacks the mediums were often joined by the heavies. On 24 and 26 April and 1 May, a total of 112 heavies weathered out of their primary targets hit 14 smaller towns in attacks of varying strength. Weather over Matsuyama airdrome on 6 May diverted nine heavies to Taihoku for a radar run while smaller numbers hit Koshun, Taito, and Kiirun. The same day twenty-three Liberators of the 22d Group bombed Kiirun. The dock and warehouse area had been designated as the target, but with cloud cover over that area, the city proper was bombed on a radar run. Also on the 6th, the 2 medium groups sent 53 Mitchells loaded with 250- and 500-pounders to knock out Mato town. When they left almost the entire town was engulfed in flames.[43] The 38th and 345th Groups teamed up to burn out the town and sugar refinery at Kari on 10 May, and the next day forty-eight mediums put the finishing touch on Kagi town, already partially destroyed. It was this mission which brought one of the unique experiences of the war to a plane of the 501st Squadron of the 345th Group piloted by Flight Officer William M. Mathews. On the approach over Kobi town and airdrome to Kagi the plane was hit in the nose and right engine by 40-mm. antiaircraft

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fire. Temporarily out of control, the plane skidded down and to the right onto the Kobi strip but it bounced back into the air, where Flight Officer Mathews regained control in time to join up, on single-engine operation, with planes of the 499th Squadron which had just pulled off the target. Mathews flew the damaged plane back over the Formosa Strait and landed at the emergency strip at Laoag with no serious injury to any of the crew. Examination showed 4 of the nose guns shot out and at least 118 holes in the right engine nacelle.[44]

On 11 May fifty-six Liberators left Toshien in flames. Twenty-seven B-24's followed up on 14 May, their crews observing fires in the storage and warehouse areas as they pulled away. Next day eighty-two Liberators were over Shinchiku for excellent bombing, with hits on railroad yards, industrial plants, government buildings, and residential areas. On 22 May eighty-nine heavies divided their attention among Toshien, Okayama, and Koshun. Though the attack of 19 May on Kiirun harbor* had been an effective one, 98 planes unloaded 1,000-pounders on residential sections, warehouses, and dock areas. Memorial Day brought 117 B-24's loaded with 260-pound fragmentation bombs, against Takao and its antiaircraft defenses, and Taihoku was the target for 114 heavies in another excellent mission on 31 May.[45] For the fourth straight day, all four of the heavy groups were airborne with Takao city again the target on 1 June. On 2 June two groups were scheduled for Kiirun, but finding that target cloud-covered, seventeen of the planes hit Takao instead. Again on the 3d two groups, weathered out of an attack on the Jitsugetsutan power plants, hit Takao, as did eleven other B-24's originally scheduled for Hozan. Taito was the unlucky town on 5 June, when seventeen B-24's, weathered out of both their primary and secondary targets, scored heavily on the center section. Meanwhile, the mediums had been busy with the smaller Formosa towns—an effort which continued through 9 July.[46] Commitments in support of the Balikpapan landings slowed both heavy and medium operations against Formosa during June, and in July U.S. Navy requests for airdrome strikes cut into the tonnage available for urban destruction.

Even so, the job had been done thoroughly enough. Out of eleven principal cities, the Governor-General's Office later reported five almost completely destroyed (Kiirun, Shinchiku, Kagi, Tainan, and Takao), four 50 per cent destroyed (Shoka, Heito, Giran, and Ka-

* See above, p. 481.

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renko), a third of Taihoku knocked out, and only Taichu relatively undamaged. Targets in or around the key cities of Takao, Tainan, Kiirun, Shinchiku, Taichu, and Taihoku had received 3,214 sorties and 8,435 tons of bombs, figures which represented, respectively, 42 and 53 per cent of the total air effort expended by the Fifth Air Force on Formosa. In these and lesser centers 6,100 persons were listed by the Japanese as killed, 435 missing, 3,902 severely wounded, and 5,335 slightly wounded. The Japanese also listed the total number of "sufferers"—presumedly those individuals who lost their housing or whose lives were in some other way directly affected—at 277,383. In addition to government buildings and industrial plants, 10,820 buildings were totally destroyed by bombing and 15,965 half destroyed, while 18,371 were completely and 1,162 half burned out.[47]

At Takao the city was almost obliterated and the wreckage of ships sunk in the harbor's mouth blocked the channel so effectively that only vessels of less than 100 tons could put into the harbor. At Kiirun the channel was clear but the damage to town and facilities hardly less extensive than that at Takao. Karenko's harbor was blocked, Mako's heavily damaged, and many of the smaller harbors seriously hurt. No exact figures exist, but estimates of small boats sunk or badly damaged ran as high as 600, and the loss clearly had cut heavily into coastwise shipping and fishing, this last being a main source of the island's food.[48] Up to January 1945 the Japanese consistently had sent some sixty to seventy ocean-going ships per month into Formosa's ports; thereafter a rapidly climbing rate of loss sustained by vessels en route to or from Formosa* combined with the destruction of the island's harbor facilities to cut the enemy's sea communications with this major outpost. One ship from Japan got into Kiirun during May 1945, and it was the last one until after the war. At Takao, the headquarters charged with unloading, loading, and routing of ocean vessels was dissolved by summer.[49]

Brig. Gen. Jarred V. Crabb's V Bomber Command had carried the main burden of attack, flying 87 per cent of the total sorties and dropping over 98 per cent of the bomb tonnage. Among the command's planes the B-24's, with over 5,000 sorties, contributed most heavily. The B-25's flew more than 1,400 sorties; the remainder of just under 200 sorties was divided among the A-20's, A-26's, and B-32's which

* Sixty-three ships of a total tonnage of 24,869 were recorded as sunk in or near Formosa waters. For the AAF's role in this blockade, see the following pages.

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were credited with 14 sorties in all. Grand totals showed 7,709 sorties (including fighter sorties), 15,804 tons of bombs dropped, and 62,445 gallons of napalm.[50]

Although the Japanese had chosen to conserve their aircraft for suicide raids rather than to challenge the U.S. planes in the air, antiaircraft defenses had been the most formidable yet encountered by the Fifth Air Force, except possibly earlier at Rabaul. In overcoming these defenses, which repeatedly proved intense, accurate, and skillfully varied, U.S. aircrews depended heavily upon the experience of flak intelligence officers assigned to command and air force headquarters. The B-25's of the 91st Photo Reconnaissance Wing flew special anti-radar missions on the basis of information supplied by radar ferret missions undertaken by night bombers of the 63d Squadron. Aerial photography revealed to trained eyes many antiaircraft positions, and it became a practice to assign certain planes on each mission to take out these defenses. Carefully planned approaches and evasive tactics also helped, but flak damages remained relatively high until summer.[51]

Except for a few fighter missions run in August, the Formosa campaign was completed in July. Beginning on a small scale in January, the campaign reached its peak in May and slacked off somewhat in June because of commitments on the China coast and at Balikpapan. The continuance of these commitments, plus the beginning of Fifth Air Force displacement northward in preparation for the assault on Japan, brought a further decline in July.

The South China Sea

Only in 1945, as Allied air units moved into Philippine bases, did the Far East Air Forces reach positions permitting a sustained attack on Japanese shipping in the South China Sea. Even then other targets claimed priority. The support of various operations designed to round out the victory won in the northward thrust of SWPA forces and the effort to take out Formosa kept FEAF busy well into the summer. But the time and the means were also found for work which gave to the air forces a significant share in closing off Japan's most vital lifeline.

The Allied Air Forces brought to the new task a variety of experience. After the celebrated Allied air victory of March 1943 in the Bismarck Sea the enemy had followed a policy of keeping large ships out of range of low-level attacks by B-25's, but the famous strafers had kept in practice on the lesser barges and luggers with which the Japanese

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transshipped in tactical areas. LAB-24's with special radar equipment had begun to cover southern Philippine waters in the middle of 1944. Based on Morotai from October 1944, they had joined Navy "Black Cats" in night operations, with PB4Y's operating by day, to extend the coverage into the central Philippines and to the northeastern coast of Borneo.[52] RAAF Catalinas meanwhile had developed great skill in mining enemy waters.

Though the first significant use of aerial mining against the Japanese seems to have come in Tenth Air Force operations against the port of Rangoon in February 1943,* the RAAF Catalinas had been engaged in an increasingly successful mining campaign since April of the same year. The Catalina, a long-range flying boat, could carry 2,000 pounds of mines a distance of 1,000 miles or 4,000 pounds for 750 miles. It was a dependable plane, required no extensive base facilities, and could be refueled through use of naval equipment far in advance of its own base. The RAAF received its general directive for mining operations from the Allied Naval Commander through Kenney; the selection of particular targets and the scale of the operations themselves were left to the discretion of RAAF Command. In addition to occasional operations in tactical support of other Allied forces, the RAAF sought to reach ports of general importance to enemy shipping. Usually, there was no attempt actually to close a port but rather to effect a maximum disruption of shipping in the port and to impose as heavy a burden of minesweeping on the enemy as was possible at the lowest cost. Missions lasting for as long as twenty-four hours were timed to reach the target at night. After an approach under 1,000 feet to avoid radar detection, 2 to 6 planes would make their runs, some of them for the sole purpose of forcing the enemy to sweep 2 or 3 times the area actually mined.[53] Having learned their first lessons in operations against Kavieng, the Catalina crews in July 1943 launched from Darwin a sustained program against NEI targets.

Reaching as far out as Soerabaja with the aid of refueling by a Seventh Fleet tender, the Catalinas added Balikpapan to their list in February 1944. In April of that year a third squadron was added to the original two at Darwin in an action fully justified by later enemy testimony to the effectiveness of their operations. According to that tes-

* Such operations were continued on a small scale and in 1944 expanded with the assistance of XX Bomber Command. See above, pp. 158–59.

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timony, "the destruction of tankers and delay in oil shipments was particularly serious" from early in 1944.[54] Some of the Catalinas followed SWPA forces northward to Morotai and then to the Philippines. From more northern bases it was now possible to mine the ports of Formosa, China, Hainan, and Indo-China. By 1 August 1945 RAAF Command had registered, since April 1943, a total of 1,215 mining sorties and put on target 2,498 mines at a cost of only eleven Catalinas.[55]

Enemy shipping along the Asiatic coast had first fallen under air attack by Chennault's Fourteenth Air Force in the early days of the war. He had repeatedly used the opportunity for such an attack as a main point in his arguments for greatly increased U.S. air power in China.* But his force had remained small and dependent on air supply for its logistics. Until well into 1943, moreover, it had been impossible from the Fourteenth's west China bases to reach more than a few shipping targets outside the Gulf of Tonkin and the upper Yangtze River. By the fall of 1943 new forward bases and an increase in the force available brought targets from Formosa southward under bombing and mining attack.[56] This assault was short-lived, however, for within a year of its inauguration the Japanese army had overrun the forward bases upon which continuation of the offensive depended. The Fourteenth Air Force claim of 596,620 tons of enemy shipping sunk in the course of its limited effort has been correctly considered as an exaggeration,[57] but the campaign, and especially the mining operations, was not without effect.[58] Had Chennault been able to keep his forward bases, he would have been in position to strengthen the final attempt to cut the enemy's lifeline.

As it turned out, SWPA planes took over chief responsibility for the job that had been started by Chennault. While Whitehead's Fifth Air Force directed most of the aerial operations, the total operation was interservice, intertheater, and inter-Allied. Seventh Fleet's PB4Y's from their Philippine bases flew daylight search missions as far north as Shanghai and covered almost all of the South China Sea. In the more southern reaches of that sea they were supplemented by planes of the Thirteenth Air Force, flying first from Morotai and later from southern Philippine bases. LAB-24's, belonging to the Fifth, Thirteenth, and Fourteenth Air Forces, searched the seas by night, when RAAF Catalinas also went out to mine the coastal waters of

* See, for example, Vol. IV, 435–36, 442.

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Formosa, China, and Indo-China. No small part of the air force task was to assemble the intelligence which might guide attacking planes, submarines, or surface forces to the target. Coastwatchers along the China coast and friendly observers in widely scattered ports supplemented the information of enemy movements supplied by submarine or aerial observation and photography.

The LAB-24's, because of commitments to Formosa targets, did not begin sea searches until 12 February 1945.[59] As procedures were perfected, these night bombers usually searched in triangular vectors from their home field and return—going out along one leg of the vector, searching along its base, and then returning along the other leg. One sector had its base in the Formosa Strait, another in the area from Swatow to Hong Kong, another from Hong Kong to Hainan, another Hainan Island, and still others Tonkin Gulf and the Indo-China coast line down to Cape St. Jacques near Saigon. Not all sectors were covered each night. The missions were usually flown in a strength of from three to six planes. Sometimes lucrative convoys were shadowed and attacked successively by bombers taking off from two to four hours apart, but this was permitted only in blind-bombing zones where there were known to be no U.S. submarines. Where friendly submarines might be surfaced, the planes' task was to shadow the target until morning, when other planes could be directed to a daylight attack. The PBY's and PB4Y's of the Seventh Fleet shared the work with the LAB-24's and carried the main burden of search by day.

The method is well illustrated by attempts to bring to bay an enemy naval force of two battleships, a cruiser, and three destroyers in February 1945, even though the effort failed. These Japanese units had gambled on a long-range forecast of bad weather in undertaking the run from Singapore to Japan. They were picked up between the Anambas and Great Natoena islands at 1340 on 11 February by a submarine, which gave the signal for a coordinated effort by all services in accordance with plans (CRUSADE) agreed upon in anticipation of the attempt. SWPA searchplanes made contact on 12 February, and thereafter relays of Army and Navy radar-equipped planes tracked the vessels almost continuously. A strike was planned for 1100 on 13 February, when the force would come within range of heavies on Leyte and the mediums and fighters at Mindoro. With forty-eight P-51's on assignment as fighter escort, the B-24's of the 90th, 43d, and 22d Bombardment Groups and forty B-25's of the

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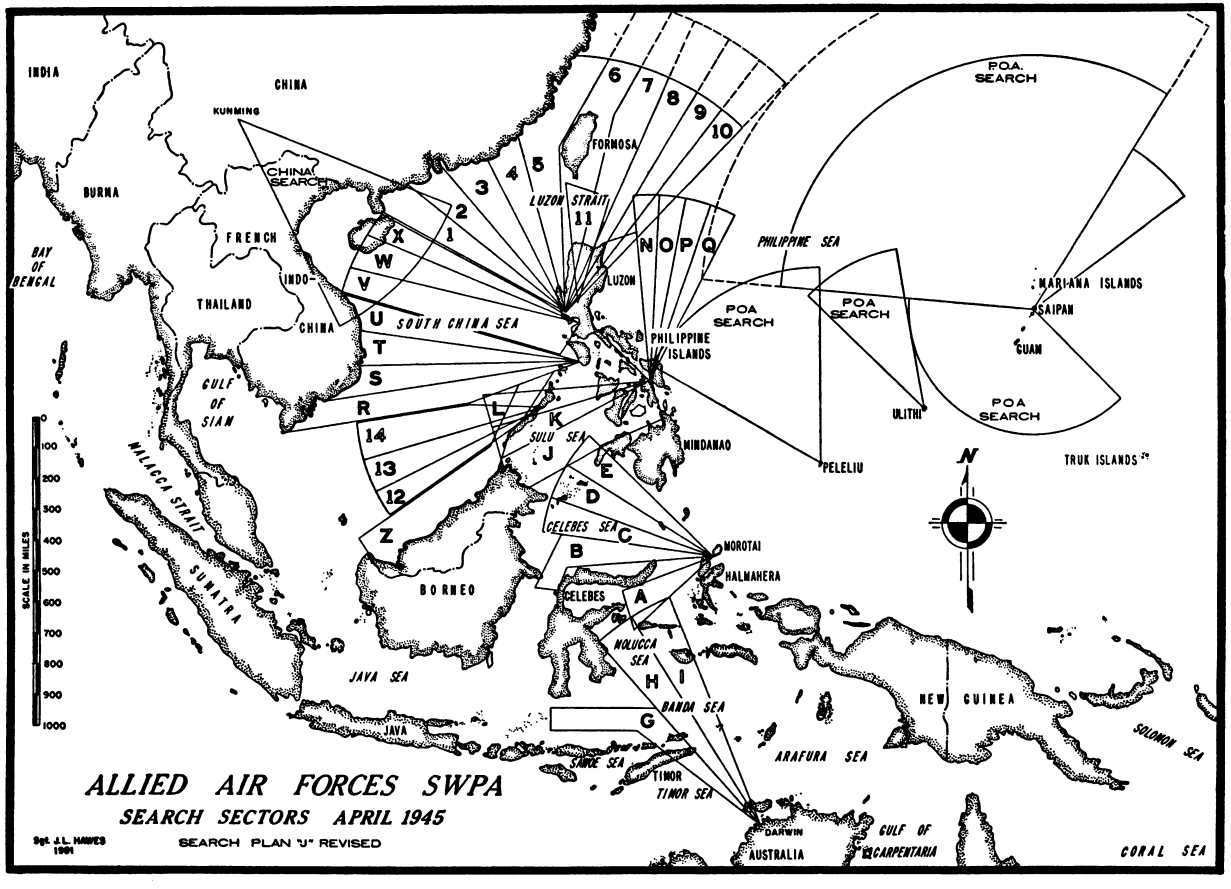

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345th Group made a perfect rendezvous, but the clouds, virtually unbroken at all altitudes of attack, covered the targets, and to protect submarines also in the hunt, blind bombing had been forbidden. As fuel tanks drained, the planes returned to base.[60] Searchplanes continued to track the enemy ships and another strike was set for the 14th. By this time the target had got beyond the reach of Leyte-based groups and the strike was limited to the 90th Group's Liberators, the 345th Group's Mitchells, and a fighter escort. Again, H2X bombing was forbidden and the planes failed to make visual contact because of the weather. And that was the last chance. One submarine had attacked on 13 February, reporting damage to one battleship and one cruiser, but the claim went unconfirmed. AAF planes had shot down one Topsy over the target area on the 13th, and searchplanes accounted for additional enemy fighters during the period.[61] But the Japanese had made good their escape.

Ten Mitchells of the 38th Group had better luck against a convoy of four escort and four merchant vessels on 22 February. Attacking in 2-plane elements, the B-25's claimed a destroyer sunk and an 8,000-ton freighter left smoking heavily, but these claims have not been officially credited.* In response to a call from one of the nightly LAB-24 search missions, a force of nine B-25's on 23 February hit a seven-ship convoy in Phanrang Bay. Direct hits were claimed on two escort ships and one freighter; official credit has been given for one submarine chaser sunk. One Mitchell was lost to flak.[62]

Sailing junks were assumed to be Chinese fishing vessels and were not attacked, but power-driven junks in the open seas were considered to be operating for the Japanese and were attacked whenever bigger game was not found. Ten to fifteen of them were sunk near

* The official credit cited on this and following pages is the listing found in "Japanese Naval and Merchant Losses During World War II," February 1947, prepared by the Joint Army-Navy Assessment Committee (cited as JANAC). This listing does not show merchant vessels smaller than 500 tons. Ships of larger tonnage and all naval vessels are listed by date of sinking, name, type, tonnage, position of sinking, and agent of sinking. These listings are used as official confirmation of claims by Army, Navy, and Air Force agencies, but in the opinion of the author the committee findings are to some extent prejudiced toward naval claims in doubtful cases. Findings of the Anti-Submarine Warfare Assessment Committee (Office Chief of Naval Operations), for instance, were accepted by the joint Army-Navy committee without further evaluation. Numerous instances occur of submarine sinkings in an area where previous air force attacks had made claims a day or two before. That the JANAC is not above error is indicated on page 82 by a listing of a 6,500-ton tanker sunk on 1 February 1945 at 1°20′ N, 109°5′ E and credited to Army aircraft. As near as can be determined this position is twenty-five to fifty miles inland on the western cape of Borneo.

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Hong Kong on 27 February by a B-25 shipping sweep, and twenty-one B-25's on a hunt between Hong Kong and Swatow on 1 March sank a 1,500-ton cargo ship. Night bombers got a tanker in the Hainan Strait on the night of 2/3 March; two nights later they sank a submarine chaser in the same area. The B-25's sank an 887-ton cargo ship in the China Sea and claimed another ship sunk and still others damaged on 5 March. Five days later 12 of the "Air Apaches" found and sank a 5,239-ton tanker in Tourane Bay; they also claimed another smaller cargo vessel sunk and 1 damaged. Night bombers found and sank a Japanese frigate off the China coast on the night of 12/13 March. A combined strike by 22 Mitchells from the Fifth Air Force's 38th Group and the Thirteenth Air Force's 42d Bombardment Group swept the coastal waters from Swatow to Hainan Island on 13 March with confirmed scores of a frigate and a 2,742-ton cargo vessel sunk. On 15 March, 13 B-25's from the 38th and 345th Groups, sweeping the Hong Kong–Swatow area, scored a direct hit with a 500-pounder amidship on a 4,500-ton cargo vessel. According to the mission report, a secondary explosion broke the ship in two, but the official listing fails to credit the claim. Other planes claimed a direct hit on the stern of a destroyer. Twenty-two planes of the 38th Group, overtaking four freighters and four escorts off Quemoy Island on 20 March, claimed a cargo ship and a destroyer escort sunk, with two more freighters and one escort damaged.* Two of the B-25's fell to flak and two others headed inland into China for crash landings. Next day, off the Indo-China coast, the B-25's found a seven-ship convoy covered by eight to ten enemy fighters. One 779-ton cargo ship, an 834-ton tanker, a submarine chaser, and a 2,000-ton repair ship were sunk; in addition, 4 of the enemy fighters were shot down with 2 more listed as probables. One B-25 was lost and enemy fire damaged five others. Also on the 21st, the 38th claimed the sinking of two cargo ships which have not been officially credited to the group.[63]

One of the night bombers is credited with a 2,857-ton cargo vessel sunk off the Luichow Peninsula on the night of 27/28 March. That same night an unarmed searchplane reported a large convoy off the Indo-China coast. A B-24 of the 63d Squadron, piloted by 2d Lt. William H. Williams, responded to the call, reaching the target at about

* JANAC credited the mission with one 500-ton cargo vessel and another 1,577-ton ship.

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1100 the next morning, after a seven-hour flight. In the face of concentrated antiaircraft fire, Lieutenant Williams made his run at 300-foot altitude over a ship he took to be a tanker. Three bombs, strung nicely across the vessel, failed to explode; so Williams turned his now damaged plane back for another run and this time scored two hits which flamed the ship and caused it to list sharply. He got back home to claim a sinking, later credited as a 6,925-ton cargo vessel, but the way home was hard. After pulling off target, the injured B-24 was jumped by two aggressive Oscars. The Japanese fighters killed the co-pilot with a 20-mm. shell on the first pass, got the radar operator on a second, and knocked out the No. 3 engine on their third pass. The top turret gunner sent one of the enemy smoking into the clouds, but the B-24, its electrical and hydraulic systems also gone, was so nose-heavy that it took two men to hold the control wheels back. Over its base at last, the plane, unbraked by its flaps, came in fast for a crash landing at the end of the strip.[64] With the aid of continued tracking, thirty-one B-25's of the 345th Group attacked the same convoy in a position farther north along the Indo-China coast on 29 March. They claimed the sinking of 3 large merchant vessels, 1 small one, 4 destroyers or frigates, and 1 patrol craft; they are credited with 2 frigates and a merchant vessel of 956 tons.* Eleven of the Mitchells were holed by the heavy concentration of ship's fire. A 2,860-ton tanker (credited to Army aircraft on 29 March as sunk in a position farther north) may have been in this convoy.[65]

The following night (29/30 March) marked the extension of night bomber operations northward to Shanghai and inland along the Yangtze River in search of shipping. Whitehead had asked permission to extend LAB searches to the Yangtze on 22 March, and CBI's approval came through promptly. Since the overwater route passed through POA, prior notification of missions had to be sent to the commander of the Fifth Fleet (Admiral Spruance) as well as to Chennault.[66] Of the 3 bombers sent on this first mission only 1 found shipping, but it claimed a 1,900-ton merchantman.[67]

V Fighter Command regularly sent escorts to cover B-25 operations and rescue missions flown by Catalinas. Sometimes the fighters covered B-24's on search during daylight hours. Scoring regularly on Japanese fighters, the escorts helped cut down Japanese strength to

* Submarines have been credited with a 5,542-ton tanker and a frigate sunk along the convoy's route.

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such an extent that by April 1945 few enemy convoys had protective covering. As one Japanese convoy commander put it, "When we requested air cover, only American planes showed up."[68] By that time the mounting air attack on Formosa had forced the Japanese First Escort Fleet's air squadron to withdraw most of its remaining planes to bases along the China coast, and their withdrawal still further to Shanghai and Kyushu was already near completion. This left the convoys largely unprotected from the air.[69]

Through the Sulu Sea, the Celebes Sea, Makassar Strait, the Java Sea, and off the coast of Borneo, the LAB-24's of the Thirteenth Air Force were also active. Few large ships operated in these areas, but there was still considerable traffic of small vessels. Thirteenth Air Force planes are officially credited with sinking 3 submarine chasers in March, 1 in April, 1 in June, a small merchant ship in March, a 6,863-ton converted seaplane tender on 30 April, and 2 merchant vessels on 7 May. Though heavily committed to support of southern Philippine operations and Australian landings on Borneo, the Thirteenth Air Force carried out attacks against Japanese airfields throughout Borneo and even mounted extremely long-range B-24 attacks against shipping and airfields at Soerabaja—the first of these being led by Maj. Baylis E. Harris on 19 April.[70]

Land-based Navy patrol planes, which carried their full share of the job, normally were content to signal the Fifth Air Force on the location of defended convoys and concentrated their own attacks on single ships trying to run the blockade. To discourage Japanese shipping from holing up during the day in harbors too strongly protected for B-25 attack, General Crabb sent his heavy bombers out in a series of missions against harbors. On 31 March 13 Liberators used 500-pounders against shipping in Yulin Harbor on Hainan Island; 2 large merchant vessels were claimed sunk, but there is no official confirmation. Forty-three B-24's from the 43d and 22d Groups carried 1,000-pounders to Hong Kong on 3 April;* three large merchant vessels were claimed sunk as well as many smaller ones, but the official listing is only one 2,750-ton cargo vessel and one 2,172-ton cargo vessel. Twelve direct hits were scored on oil storage tanks. Eleven planes were hit by flak, and both groups were intercepted. Forty-one planes from the same groups repeated on 4 April when 2 hits were claimed on a 10,000-ton vessel being repaired in the Tai Koo dry dock. Bombs

* See below, p. 502.

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were strung through concentrations of small shipping in the Victoria harbor area and hits on oil storage and the power plant there were claimed. While the heavies worked over Hong Kong, twelve B-25's attacked the Mako naval base in the Pescadores, where two small tankers were caught tied up on opposite sides of the fueling pier. A direct hit on one tanker exploded it and caused burning oil to be thrown across the pier to the other tanker, which was soon engulfed in flames. Both tankers (658 and 834 tons respectively) are officially credited; 1 smaller ship and 5 barges were also claimed and hits were scored on residences, administrative buildings, and barracks. Accurate AA fire got one plane and damaged four others.[71]

On 5 April three A-20's of the 3d Group joined in with a unique antishipping mission. Col. Richard E. Ellis, group commander, had rigged up extra wing tanks for his short-range A-20's. At 25 he was a veteran with over 200 combat missions in medium bombers and was the youngest colonel and group commander in FEAF. Tired of routine ground support missions on Luzon, he requested permission to test his long-range A-20's against Japanese shipping. His suggestion met with a cool reception from Generals Whitehead and Kenney, but unknown to them he had made the same proposition to Col. D. W. Hutchison of the 308th Bombardment Wing at Lingayen. Hutchison agreed to a trial on the next convoy with the understanding that B-25's precede him and work over the convoy before the A-20's attacked. When a convoy was reported off Hong Kong on 5 April, the B-25's took off from Lingayen and were followed after a thirty-minute interval by three A-20's, led by Colonel Ellis. His two wingmen were the group deputy commander and operations officer. The B-25's missed the convoy, but Colonel Ellis found it—a fat cargo ship with two escorts. Each wingman attacked one escort while Colonel Ellis attacked the cargo ship, which was hit and sunk in shallow water.* One of the destroyer escorts was left dead in the water, and the other damaged as the A-20's went home. When he heard of the mission, General Kenney seems hardly to have known whether to reprimand Ellis or pin a medal on him. The dilemma was solved by forbidding him further combat flying and moving him to the job of Assistant Deputy Chief for Operations, FEAF.[72]

The next day, 6 April, saw one of the most vicious shipping strikes of the entire Fifth Air Force campaign against China Sea shipping.

* A 2,193-ton ship is officially listed as sunk on 5 April.

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Twenty-four Mitchells of the 345th's "Air Apaches" went out to attack a convoy reported off Amoy—two frigates and a destroyer of the newest type with a jury-rigged bow. This destroyer by now was familiar and the Air Apaches had a score to settle with it. Photographs had first shown the vessel under repair at Singapore on 10 February. In a sweep of Yulin Harbor on 30 March by the 345th, the ship was again photographed, at which time it had shot down one B-25. Reconnaissance photographs of Hong Kong harbor on 2 and 4 April had shown it there. It had made half the distance to Japan but it got no farther. The first two squadrons attacked the convoy's two frigates, one of which quickly sank, but the other was still afloat and firing as the third squadron came in. One plane was hit and barely made it back to base on one engine, but three more hits were scored, sinking the second frigate. The fourth squadron went on to the destroyer; two planes of the leading element were hit on the approach but continued their run and scored one direct hit. One went into the sea just beyond the destroyer, but the other made it back to base, though the pilot, co-pilot, and navigator had been wounded by an explosive shell in the cockpit. The third squadron, having finished off the second frigate, now attacked the destroyer. Again the first plane was hit by ack-ack and ditched, but one or more direct hits were scored, and as the group headed for home, the destroyer was burning fiercely. All three claims are officially credited.[73]

The next target was a twelve- to fifteen-ship convoy found on the night of 5/6 April. The 63d Squadron, sending out a total of ten planes, shadowed it for three days and nights and claimed one 7,000-ton transport, one destroyer, and damage to a light cruiser. Seventeen Mitchells of the 38th Group failed to locate the convoy on 7 April because of poor weather, and when the convoy was finally out of range, the night bombers returned to their regular searches, concentrating on the Shanghai and Yangtze River area. They are credited with a 901-ton cargo ship off Shanghai on 14 April but had very poor hunting the rest of the month. By this time, however, permission had been granted to bomb certain targets on the Chinese mainland, so that secondary targets (chiefly airdromes) began to be regularly visited at the end of a fruitless sea search.[74]

With few ship sightings in open water, the heavy and medium bombers concentrated on harbors in China and Indo-China. Twenty Liberators bombed shipping at Saigon with 1,000-pound bombs on

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both 20 and 22 April,* some direct hits being scored on large merchant ships. Intercepting fighters were driven off on both missions with one claimed destroyed on 20 April. Eight B-24's were holed. Again on 23 April, twenty B-24's went to Yulin Harbor on Hainan claiming a number of barges and two freighters. Twenty-five Mitchells, after shipping in the Canton River, turned back on 26 April because of weather, but two days later fifteen planes over the Saigon River claimed four large merchant vessels as probably sunk along with a number of smaller craft. Antiaircraft fire and an enemy fighter shot down three B-25's and five were holed. Except for searches, few shipping missions were run in May. Night bombers made many attacks in the Shanghai–Yangtze River area during the month, but none of their numerous claims are confirmed. On 13 June an experimental mission, run by 62 Liberators loaded with 55-gallon drums of napalm for the smaller wooden ships clustered in Hong Kong harbor, left the bay a sea of flames.[75]

The Japanese had tried every stratagem in the book by summer 1945, but the Allied air-sea blockade had cut the enemy's lifeline. In the long and grueling test chief honors belong to U.S. submarine forces, with the airplane, both U.S. and Australian, Army and Navy, finally giving to the interdiction of shipping through the South China Sea a truly tight effectiveness. By 9 April 1945 Whitehead could report to Kenney: "As of this date the Japanese sea lane to its captured empire from Hong Kong south, is cut. . . . While there is some clean-up work remaining to be done, namely small shipping around Hainan Island and along the China Coast, not many targets remain."[76] Statistics on subsequent ship sinkings fully substantiate the prediction. The sea searches continued, but virtually all missions now were briefed for a secondary target in China or Indo-China.

China and Indo-China

In January 1945, General Chamberlin had expressed GHQ's view that SWPA air units had no commitment for attacks against the Chinese mainland. It soon became evident to Whitehead, however, that it would be difficult to block the China Sea effectively unless enemy air bases along the China coast could be attacked. Not only did these bases shelter the remaining Japanese potential for convoy cover, but ports and harbors heavily defended by antiaircraft guns were being

* See below, p. 502.

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used for haven, repair, and refueling of convoys in their painful progress along the China and Indo-China coasts. Kenney, at Whitehead's request, petitioned GHQ for permission to attack these targets in early February. At that time GHQ felt that the pressure of current operations in the Philippines and the requirement for support of POA at Okinawa by attacks on Formosa would strain SWPA logistics to the limit. But a promise was given to request approval from the China Theater at a later date, and by 20 March, after conferences with representatives of the Fourteenth Air Force, the permission was granted for attacks on the Chinese mainland after other commitments had been met.[77]

FEAF outlined particular target areas agreed upon with China Theater representatives. These areas included hostile air forces, air installations, and air bases along the China coast between Minhow (inclusive) and the Indo-China boundry (inclusive) and along the Indo-China coast between Tourane (exclusive) and Saigon (inclusive). Also listed was the railroad and its bridges between Saigon and Tourane (exclusive). Water-front areas and supply bases at Hong Kong, Saigon, and Canton, as well as other targets specifically designated by Chennault, were listed. It should be noted that many important and valuable targets within these areas were withheld for national interests. The Fourteenth Air Force was to continue attacks on Japanese air north of Foochow and between Tourane and the Indo-China–China border; it also covered the rail lines from Tourane north. This railroad was of particular significance because it was the only remaining means for the Japanese to shift their Malaya–Siam–Indo-China forces north to oppose an Allied counteroffensive in China planned for the summer of 1945. Allied convoy attacks had virtually stopped seaborne movements north of Saigon, but the Japanese were capable of moving men and supplies by sea to Saigon, then by rail to China.[78]

Whitehead had anticipated this plan: his B-24's had hit the Canton airdromes White Cloud and Tien-Ho as secondary targets on the nights of 17/18, 18/19, and 19/20 March. On 21 March, two groups sent thirty-seven Liberators with fighter cover to work over Samah airdrome on Hainan Island (this portion of Hainan lay within the SWPA). Seven planes and two hangars were claimed destroyed, with other damage; ten B-24's were holed by intense and accurate flak. A series of attacks designed to cripple Japanese ship repair facilities began on 31 March when thirteen B-24's hit shipping and docks in Yulin

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Harbor. Thirty-seven Liberators went to Hong Kong on 2 April dropping 1,000-pounders on the Kowloon and Tai Koo docks with good results; two Tojos attempted interception but the P-38 cover drove them off. The next day's mission to Hong Kong was primarily directed to shipping, but warehouses and an oil pipeline on Stonecutters Island were also hit. On 4 April, 41 more Liberators were back over Hong Kong with 1,000-pounders scoring in the Victoria city harbor area on the power plant, oil storage tanks, and the Royal Navy Yard. For the fourth straight day, on 5 April, twenty B-24's bombed the Kowloon docks and the Kai Tak airdrome at Hong Kong. On 6 April twenty-three Liberators covered the Yulin Harbor docks and oil storage, giving Hong Kong a rest.[79]

The "take-out" of Saigon started on 19 April when eight Liberators of the Thirteenth Air Force's 307th Group staged through Palawan and bombed the harbor through clouds. On 22 April, twenty 380th Group B-24's hit the naval yards and shipping with 1,000-pounders, followed the next day by twenty-four 90th Group planes which scored on the dry docks, warehouses, and oil storage tanks. The two groups joined forces on 25 and 26 April to put forty-six and forty-seven planes, respectively, over Saigon. Hits were scored on dry docks, warehouses, ships at dock, barracks, an alcohol plant, and other installations. The same groups shifted their sights to the Texaco, Standard, Shell, and Socony-Vacuum oil installations at Saigon on 3 May, putting 47 Liberators loaded with 100-pounders over the targets and the same number loaded with 250-pounders on 4 May.[80]

Meanwhile, the LAB-24's, the medium bombers, and fighters on shipping sweeps, running short of primaries, hit their secondary land targets. The night-flying Liberators hit airdromes, oil storage, supply depots, or arms plants—any vital target suitable for radar bombing from the Hong Kong–Canton area north to Shanghai. The medium bombers hit targets of opportunity on Hainan Island and along the Asiatic coast until 7 May, after which they were assigned Indo-China railroad targets, often as a primary. After being released from their bomber escort duties, fighters would go down on strafing runs over targets of opportunity. Favorite locations for independent fighter sweeps were the tributaries of the Canton and Saigon rivers as well as the coastal areas from Saigon to Tourane and Hong Kong to Swatow. While there were still Japanese fighters on Asiatic coastal bases and unescorted bombers might be intercepted, the last fighter encounter

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occurred on 2 April over Hong Kong, where escorting P-51's claimed one destroyed and two probables.[81]

On 2 April V Bomber Command's estimate of enemy air strength (based on photo interpretation) in the Hong Kong–Canton area was seventy-eight serviceable planes (fifty-nine fighters). The number went down to 62 planes on 27 April, but rose to 131 planes (119 fighters) on 7 May. This was interpreted as indicative of a decision to defend the area, but postwar testimony indicates that the increase was transitory—resulting from the shift of available air strength from Malayan and Indo-China bases northward toward Shanghai and the homeland. Maximum-strength heavy bomber missions were sent out on 9 May. Two groups, totaling 41 B-24's, loaded with 100-pounders and 20-pound fragmentation bombs struck the White Cloud dispersal and revetment areas through the cloud cover; 44 planes loaded with 20- and 260-pound frags bombed Tien-Ho airdrome. Four groups again were sent out to the Canton airdromes on 10 May, and when the plane count the following day dropped again to sixty-eight planes, the airdrome targets were turned over to night bombers for occasional harassing strikes.[82]

Attacks on Indo-China rail lines started on 7 May, when fourteen B-25's swept along the coastal railroad bombing and strafing three stations, two bridges, and rolling stock. Next day, forty-eight Liberators in six-plane formations bombed railroad bridges, with hits scored at Phu Khe, Nhatrang, Phanrang, and Tuyhoa while the Bong Son, Thoa River, and Ve River bridges were missed. The same day, sixteen Mitchells swept the railroad from Phanrang to Binh Dinh. Again on 13 May, 43 heavy bombers using 1,000-pound bombs attacked bridges along the same coastal stretch. Railroad yards were the targets for group formations on 27 May. Twenty-four of the 90th Group's "Jolly Rogers" made a damaging attack on the Muongman railroad yards while twenty 380th Group B-24's scored equally well on the Phanrang yards. Next day, the 90th Group again had twenty-four planes over the targets, twelve dropping on Muongman, six on the Gia Ray rail yards, and the other six hitting rolling stock between Saigon and Phanrang. On this mission the heavies made strafing passes after expending their bombs. Twenty-three 380th Group planes repeated their Phanrang mission. On 12 June, the two groups combined to send forty-four Liberators against the railroad yards at Saigon.[83]

Two special missions were run by the 90th Group after permission

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had been obtained from Chennault. On 12 July 23 planes dropped 500-pound bombs on the Canton supply depot scoring on warehouses and leaving several fires. On a similar mission, fourteen planes were sent to finish off the Canton small arms plant, often a secondary target for previous LAB-24 missions. Over 50 per cent of the bombs were on the target, leaving good fires as the planes pulled off.[84]

The technique employed on missions to the Asiatic mainland was usually that of the mass strike on a key point. The intervals between strikes are explained chiefly by other commitments, especially those at Formosa. Like other American forces which earlier had anticipated that the China coast would hold for them targets of major importance, the Fifth Air Force by July was moving forward to Okinawa with the focus of its plans now placed on Japan itself.

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MARIANAS AIR BASES

Above: Harmon Field, Guam

Below: Isley Field, Saipan

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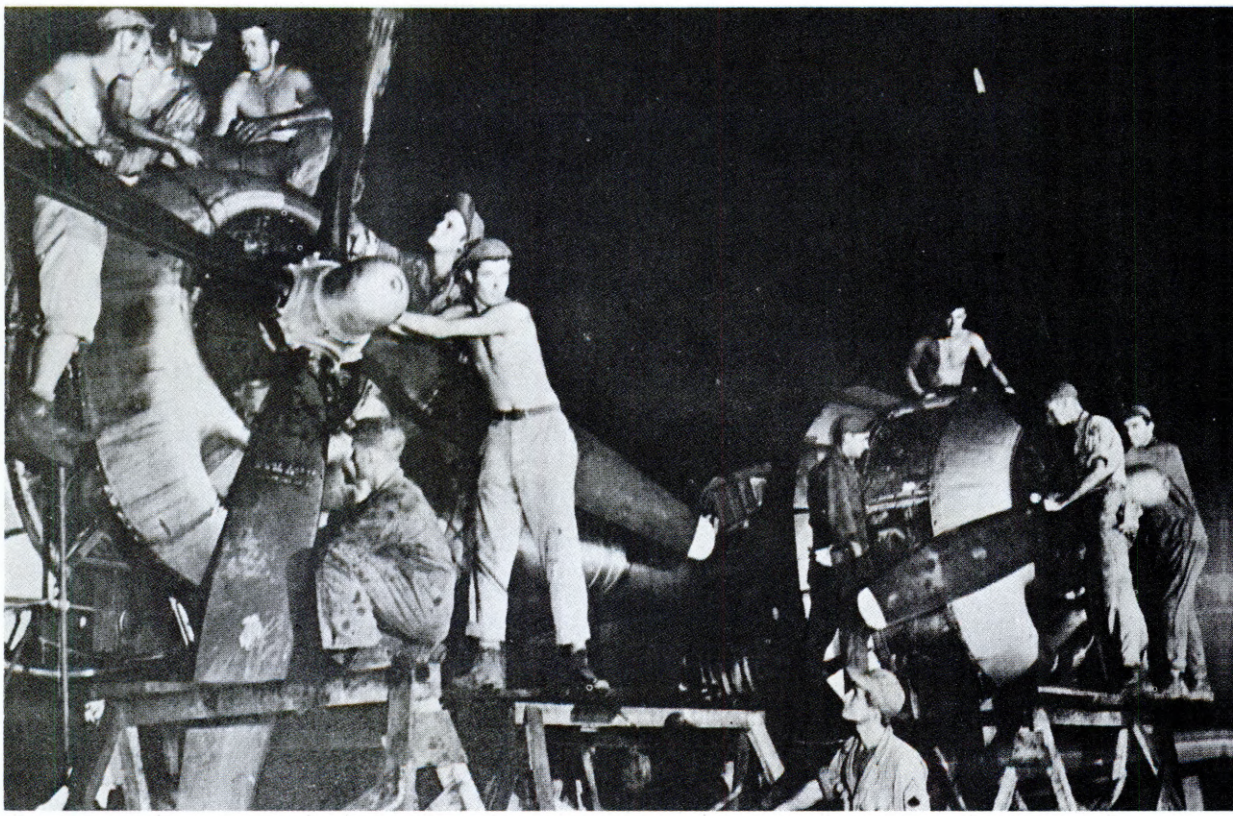

B-29 MAINTENANCE

Above: R-3350 Engines at Guam

Below: Night Work during the March Fire Blitz

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SECTION IV

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STRATEGIC BOMBARDMENT FROM PACIFIC BASES

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CHAPTER 17

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PREPARATION FOR COMBAT

THE JCS decision that the major strength of the Twentieth Air Force would be based in the Pacific has been discussed in earlier pages.* B-29 combat operations from Saipan, Tinian, and Guam will be described in succeeding chapters. Here the purpose is to describe the complex organization that nourished XXI Bomber Command through its climactic assault on the Japanese homeland. Since the Joint Chiefs, in introducing the B-29 into the Pacific, divorced operational control from administrative and logistical services, there is warrant enough for the separate discussion that follows.

AAFPOA

The JCS directed Admiral Nimitz to seize the southern Marianas as bases for the B-29 on 12 March 1944—only three months before the 15 June target date.[1] In that time, while completing preparations for the amphibious assault,† he had to make plans for constructing necessary airdromes, for moving new air units into the theater, for stockpiling ammunition and fuel, and for the providing of other essential logistical and administrative services. The operations of the new air organization were to be directed by Arnold as executive for the JCS—a decision incidentally not made final until 1 April[2]—but Nimitz, as theater commander, was to be responsible for all else. As theater commander, Nimitz could count upon subordinate Army and AAF staffs to carry much of the burden—upon Lt. Gen. Robert C. Richardson, commanding U.S. Army Forces in the Central Pacific Area (USAFICPA), and upon Maj. Gen. Willis H. Hale, the commander of the Seventh Air Force. But since the command arrangements planned for

* See above, pp. 29–32.

† AAF participation in the conquest of Saipan is discussed in Vol. IV, Chap. 20.

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the Twentieth Air Force presented organizational problems of peculiar complexity, much depended upon the attention that could be given these problems by Nimitz himself or his deputy, Rear Adm. Forrest P. Sherman, in consultation with representatives of appropriate headquarters in Washington.

Even in advance of formal action by the JCS on Arnold's command of the Twentieth, Maj. Gen. Laurence S. Kuter, the AAF's top planner, had flown to Hawaii in late March to open preliminary conferences with Nimitz and his staff.[3] Kuter's trip was tacit acknowledgment that definitive arrangements could be made only in the theater; thus, by mid-April Arnold and Nimitz were agreed that a small group of officers should proceed immediately to Pearl Harbor to furnish CINCPOA's staff an outline of VHB requirements and to assist in completing the over-all logistic plan.[4] Maj. Gen. Walter H. Frank was named on 20 April to head a special mission for this purpose,[5] and also to gain agreement on such other problems as those pertaining to communications for B-29 units. Arnold cautioned Frank to remember that the construction and defense of VHB bases, together with the provision of supplies, was CINCPOA's responsibility. General Frank was to inform Nimitz of VHB requirements, but to avoid giving any impression of trying to dictate how those needs should be met.[6]

With the assistance of five officers representing the AAF, Army, Navy, and Marine Corps, Frank sat in formal conference at Pearl Harbor from 29 April to 4 May with representatives of Nimitz. Admiral Sherman presided and senior officers both of USAFICPA and the Seventh Air Force participated. The wide range of subjects under discussion included base development, airfield construction, weather information, transportation and shipping, communications, intelligence, personnel, and ordnance. And so great was the rapport established that the final report (the Frank Report) became a veritable bible for VHB planners and commanders in the months that followed.[7] Nimitz wrote Arnold on the final day of the conference that he saw no insuperable difficulties in integrating their common plans.[8] At Nimitz' suggestion, an advanced echelon of the XXI Bomber Command under Brig. Gen. Charles E. Thomas was established at Hickam Field late in May to effect necessary coordination with the staffs of Nimitz, Richardson, and Hale.[9]

Back in Washington, the JCS on 7 June approved a report of the Joint Logistics Committee delineating responsibilities for support of

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all AAF elements in future POA operations according to the plan described below.[10]

CINCPOA: responsible for 1) assignment of blocks of communication call signs and frequencies, and construction and maintenance of interbase wire communications system; 2) receipt, storage, and final delivery of aviation gasoline to airdromes, and construction and maintenance of all gasoline storage and distribution systems; 3) construction and maintenance of airdromes, airdrome installations, and housing; 4) miscellaneous support including establishment and operation of additional depot facilities, installation and operation of port and beachhead facilities, all water and rail transportation service and motor transport service forward to depots, routing, convoy, and protection of AAF aircraft repair ships, evacuation, hospitalization, and other special services; and 5) all supply channels.

Commander, Twentieth Air Force: responsible for 1) first, second, and third echelons of supply, maintenance, and reclamation of all units assigned to the Twentieth Air Force; 2) the establishment and operation in the Marianas of the necessary AAF depots and AAF aircraft repair ships for fourth echelon supply, maintenance, and reclamation of Air Corps technical, ordnance, and signal supplies and equipment, and other items peculiar to the air forces; 3) operation of all communication systems required by the Twentieth Air Force in the Marianas, except those normally operated by the Army Airways Communication System, and construction of all wire systems within bases of the XXI Bomber Command; and 4) all motor transport service to Twentieth Air Force installations forward of depots in the Marianas.[11]

This directive also recognized CINCPOA's responsibility for establishing administrative policies which would be equitable and uniform for all elements within the theater. To insure against "conflict or interference" between the forces of CINCPOA and those of the Twentieth Air Force, both of whom were operating under JCS directives, it was specifically provided that local authority to resolve such difficulties would be exercised by CINCPOA or his area commander.[12] In the interest of economy, depots of the Twentieth Air Force were also to support other elements of the AAF based in the Marianas. To provide supporting ground services for the anticipated twelve groups of B-29's, the War Department allocated to the theater additional service and engineer troops.[13]

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The prospective augmentation of AAF strength in POA called logically for the creation of a new theater air headquarters. Seventh Air Force, the ranking air organization in the theater, could have served well enough, with additions to its staff, as an administrative headquarters for the additional AAF units specifically assigned to the theater, but it would have been in a somewhat anomalous position if it tried to perform those services for units belonging to the Twentieth Air Force.* To allow that force to attend to its own needs would have unnecessarily duplicated air force channels within the theater. Arnold, moreover, felt the need for "a strong hand" in negotiating intra-theater priorities on such things as shipping and construction.[14] The anticipated redeployment of large forces from Europe after V-E Day apparently provided another but secondary argument for a new air headquarters.

Richardson's proposals for an air echelon above the Seventh Air Force to accommodate expected augmentation of the AAF in the central Pacific had won no support in Washington until the VHB's were assured for the Marianas.[15] But on 10 March, the same day that the Joint Planning Staff recommended the 15 June assault on the Marianas,[16] the War Department approved the activation of an additional AAF headquarters in the Pacific Ocean Areas.[17] In answer to Hale's protest that this action would denude his command of experienced personnel, Arnold replied that the principal function of the new headquarters would be to secure equitable logistical support for both the Seventh Air Force and XXI Bomber Command. He also expected the new headquarters, though planned as a small one, to have a "most important function in effecting coordination of operations between XXI Bomber Command and the theater air agencies."[18]

To head this new command the Air Staff apparently had decided as early as 16 April upon Lt. Gen. Millard F. Harmon, who, as commander of U.S. Army Forces, South Pacific Area (USAFISPA), had had long experience in the Pacific.[19] It took time, however, to work out the details. By 24 May the War Department proposed that Richardson be named Commanding General of U.S. Army Forces, Pacific Ocean Areas (USAFPOA), a command to incorporate both USAFICPA and USAFISPA, with Harmon under Richardson as Commanding General, Army Air Forces, Pacific Ocean Areas (AAFPOA). Harmon was to be responsible to Richardson for logistics and admin-

* See Vol. IV, 281–82, 675–76, for status of Seventh Air Force in POA.

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istration, and to Nimitz for the operations of air units not belonging to the Twentieth Air Force. In addition, as deputy commander of the Twentieth, Harmon would have responsibility for local coordination of operations and logistical support.[20]

From his south Pacific headquarters in New Caledonia, Harmon immediately submitted a counterproposal that AAFPOA be placed directly under Nimitz on an equal status with USAFPOA except for ultimate court-martial jurisdiction.[21] Richardson quickly and strongly objected to this violation of the principle of unity of command which put all Army elements under the theater Army commander.[22] In general, Nimitz supported Richardson's position: operational control of AAF units assigned to task forces must continue to be CINCPOA's through the task force commanders.[23] On 6 June Marshall radioed Harmon that Richardson would assume command of all Army forces under CINCPOA, but that the specific relationship of AAF elements to USAFPOA would be held in abeyance until Harmon could proceed to Washington after conferring en route with Nimitz and Richardson in Hawaii.[24]

In the final directive of 10 July[25] Harmon won major concessions. Although he did not win full independence for AAFPOA, he was made "responsible directly to CINCPOA for all matters pertaining to plans, operation, training and disposition of his forces." In addition, Harmon was designated Deputy Commander, Twentieth Air Force, and made responsible directly to Arnold in all matters affecting elements of the Twentieth Air Force in POA. Of still greater importance, Harmon was given authority to deal directly with Nimitz in the coordination of Twentieth Air Force activities in the theater.[26] In a letter to Richardson also on the 10th,[27] General Marshall explained that the directive's purpose had been to give Harmon a position in POA comparable to that held by Spaatz, Eaker, and Kenney in their theaters: each of them was responsible directly to the theater commander for all air operations while coming under the administrative control of the appropriate commander of U.S. Army forces. The Chief of Staff hoped that Harmon would participate in planning on a basis equal to that of all other commanders under Nimitz. Although Richardson was to continue in command of all Army forces in POA except for components of the Twentieth Air Force, Marshall specifically expressed his "desire" that Richardson delegate administrative authority to Harmon to the "maximum degree practicable."[28]

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Activation of Headquarters, Army Air Forces, Pacific Ocean Areas at Hickam Field followed on 1 August 1944.[29] Maj. Gen. Robert G. Breene, who had been Harmon's commander of services of supply in USAFISPA, was named deputy commander for administration as well as the commanding general of AAFPOA's service command. Breene promptly instituted a sweeping realignment of air organizations in the theater. The Seventh Air Force, formerly the senior command, was made "mobile and tactical" on 15 August by the reassignment of 112 units of various types to AAFPOA. The VII Air Force Service Command, its former administrative functions having been assumed by Breene as deputy commander for administration, was transferred to ASC/AAFPOA, where it lost its identity as an operating agency. In its place, VI Air Service Area Command was created, with headquarters at Wheeler Field and responsibility for service and supply in the rear area. Thus the Seventh was left only VII Bomber Command and VII Fighter Command. In preparation for the support of VHB units, the Hawaiian Air Depot was expanded and assigned directly to AAFPOA. For the forward or combat area, plans were laid for a Guam Air Depot, which was established in November. Although a second air service area command was planned for the forward area, it was never organized, and servicing of all tactical elements in the combat area became the function of the Guam Air Depot.[30]

Bases for the B-29

Eventually five great airfields were built in the Marianas, each of them occupied by a VHB wing: two on Guam, one on Saipan, and two on Tinian. Also located on Guam were the air depot, headquarters for XXI Bomber Command, and a forward headquarters for Harmon. Later, Iwo Jima was converted into a giant air base for staging B-29's and for long-range fighter aircraft. As the war came to an end, other Twentieth Air Force units were in place on bases in the Ryukyu Islands.[31]

The Frank Report of 3 May 1944 had tentatively approved facilities in the Marianas for twelve VHB groups and their supporting units.[32] Original plans for the airdromes had been drawn by Seventh Air Force engineers as their normal contribution to the base development program incorporated in the over-all plan for the Saipan invasion.[33] This program was coordinated with USAFICPA, which passed the requirements to CINCPOA who had final authority, not only

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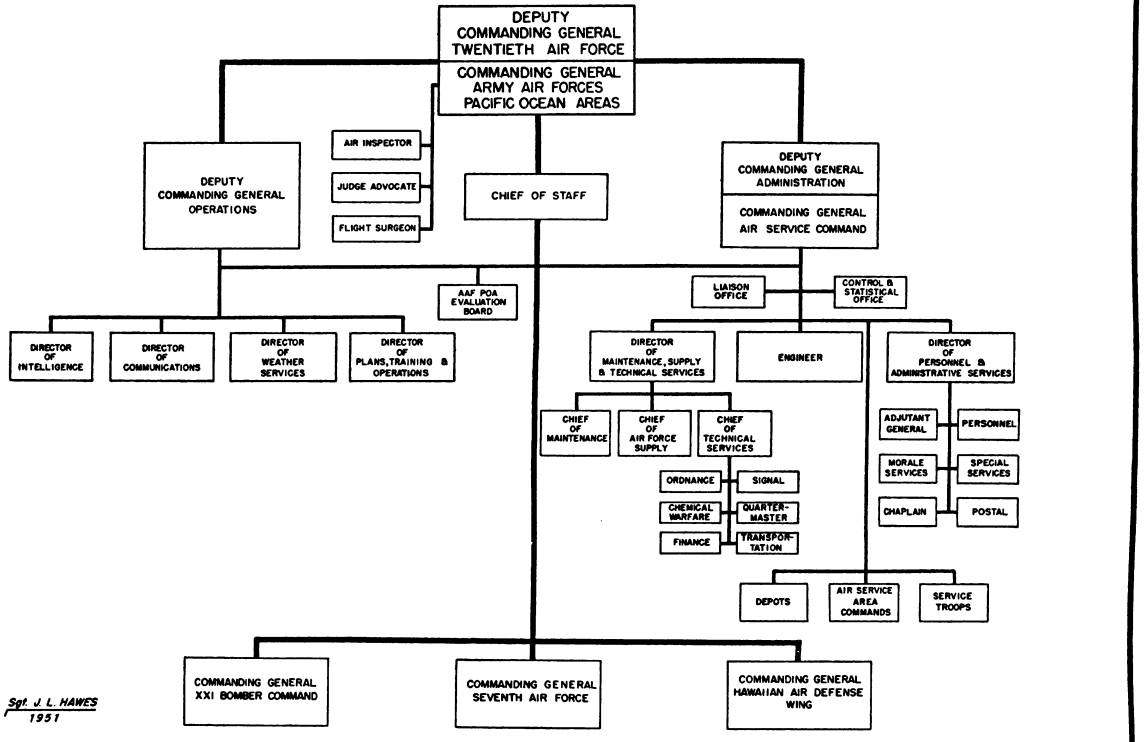
ORGANIZATION OF UNITED STATES ARMY AIR FORCES, PACIFIC OCEAN AREAS AND DEPUTY COMMANDER TWENTIETH AIR FORCE



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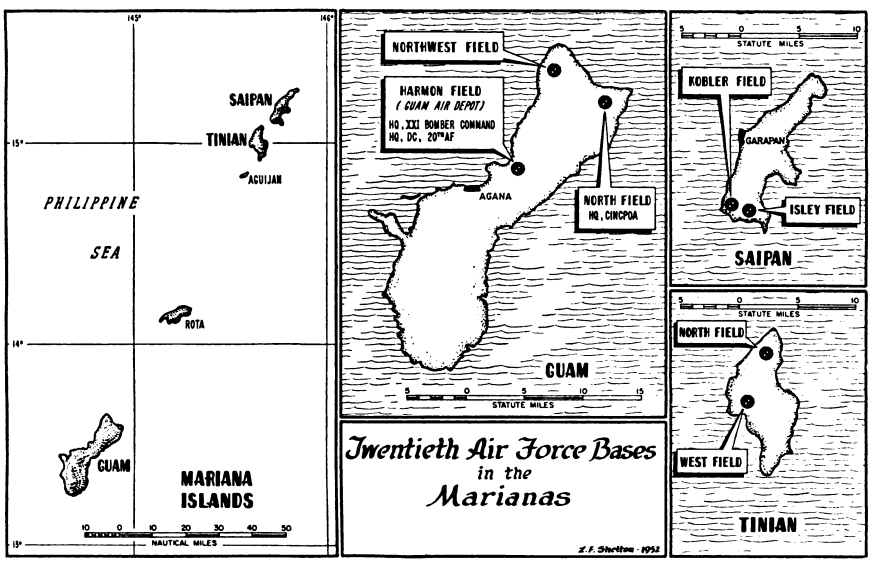
over the air base plans but over priorities for everything from construction to shipping and movement of units. Actual construction was the responsibility of island commanders, who carried out approved programs of base development under the direct command of Vice Adm. J. H. Hoover, Commander, Forward Area; Hoover answered directly to CINCPOA.[34] The Twentieth Air Force gained its first direct representation in the planning on 29 May, when headquarters for the advanced echelon of XXI Bomber Command was established at Hickam Field,[35] and General Thomas almost immediately proposed



changes to meet new VHB requirements. The labyrinth of command channels led him on 25 June to request that island commanders in the Marianas be directed to secure XXI Bomber Command approval for all final layouts for VHB airdromes.[36] This Adm. J. H. Towers, who gave Nimitz' reply, refused, with the suggestion that "engineering staffs work in close liaison with each other" but also with a warning that "final designs must comply in all respects with the requirements of CINCPOA on airfield construction in the Central Pacific."[37]

Only after 1 August, when Harmon arrived in Hawaii, did the Twentieth Air Force have a representative enjoying access to the highest POA commanders. During the seven critical months which preceded his death in February 1945, Harmon devoted his energies unstintingly to expediting the construction of bases and the establish-

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ment of VHB units in the theater. Constantly he argued for higher priorities on needed shipping and construction,[38] but although he found Nimitz sympathetic toward the program, there were many demands upon resources. The original JCS directive of 12 March had provided for the establishment of four VHB groups in POA with the highest priority for facilities, but Nimitz insisted that a subsequent directive of 11 April increasing the number by eight additional groups left the "priority to be determined by CINCPOA."[39] Whether this was the actual intent of the JCS is not clear, but supported by Admiral King, Nimitz agreed to provide for the later groups in the Marianas only as circumstances permitted.[40]

Estimated dates for minimum operational readiness had been fixed in the Frank Report as follows:* Isley Field No. 1 (Saipan), 5 October; Isley Field No. 2 (Saipan), 15 October; North Field (Tinian), 1 October; West Field (Tinian), 20 October; Depot Field (Guam), 15 October; and North Field (Guam), 15 December.[41] Movement of three VHB wings to the Marianas was then scheduled, with the first ground elements of the 73d Bombardment Wing to reach Saipan about 5 August, those of the 313th Wing to arrive at Guam about 5 October, and those of the 314th Wing to land on Tinian about 5 December. Initial air elements of these wings were scheduled for 5 October, 10 November, and 10 January, respectively.[42]

Determined enemy resistance in the Marianas upset all original schedules. Although on Saipan the delay was negligible, on Guam and Tinian all echelons intended for those two islands were delayed thirty days.[43] More serious still was Nimitz' announcement on 9 August of plans to use Guam as a base for the Pacific Fleet, as a forward headquarters for CINCPOA, and as a staging area for the projected seizure of Formosa. Naval base installations, harbor facilities, and staging requirements for ground troops all were given a construction priority higher than that of the VHB program: except for Depot Field, Harmon was informed, work on B-29 facilities on Guam had been indefinitely deferred.[44] Harmon estimated for Washington that this unexpected action would delay completion of bases on Guam by about 100 days.[45] He felt himself unable to challenge Nimitz' action, for the admiral had the responsibility for any operation that might be di-

* The names used are those subsequently assigned to the several fields. Isley Field was named for Comdr. Robert H. Isely, repeat, Isely. Unhappily, usage has perpetuated a misspelling of the name, but since that usage has become official, it has seemed inadvisable to attempt a correction in this text.

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rected against Formosa, but Harmon did protest to Arnold against the strategic advantage of a Formosa invasion. He doubted that Formosa could be occupied and its air bases developed before the war could be brought to an end by full exploitation of the Marianas.[46]

To the Air Staff in Washington, CINCPOA's action of 9 August came as "very bad news."[47] Ground echelons of the 313th Bombardment Wing were ready to proceed on 15 August to west coast ports and were due on Guam by 5 October to prepare for the advanced air elements of the wing, expected by 10 November.[48] Brig. Gen. Haywood S. Hansell, Jr., chief of staff of the Twentieth Air Force, wrote Harmon on 12 August that if the "delay at Guam is protracted, these units will either have to be super-imposed on other facilities in the Marianas, or else be diverted to the Southwest Pacific or the Aleutians."[49] After inspecting the three islands between 8 and 12 August, Harmon on the 17th proposed to Nimitz a major revision of VHB plans which promised to save the situation.[50] Ground reconnaissance by Harmon's engineers had revealed two facts as yet unknown: 1) the site of one of the two projected VHB airfields on Saipan was unsuitable for even limited B-29 operations because of a 120-foot ridge located about 6,000 feet from the point of take-off, and 2) from five to seven 8,500- by 200-foot runways could be developed on the flat areas of Tinian instead of the four planned.[51] Harmon suggested that the delays in VHB plans for Guam could be offset in part by the following revised program: 1) eliminate Isley Field No. 2 on Saipan for B-29 operations and substitute one 7,000-foot strip (Kobler Field) for temporary storage of B-29 spares and for use by miscellaneous aircraft; 2) construct two additional 8,500-foot runways on Tinian; 3) operate all four groups of the 73d Wing from the two 8,500-foot runways of Isley Field No. 1 on Saipan until the two additional runways on Tinian were available; 4) construct a total of six operational runways on Tinian with priority for one on West Field and two on North Field to accommodate the first two groups of the 313th Wing and the overflow from the 73d Wing; and 5) construct the air depot and its facilities on Guam as scheduled.[52] Although in August there were no berths for cargo ships at Tinian, CINCPOA nonetheless agreed on the 25th to develop six runways on Tinian as proposed and to transfer the 313th Wing from Guam to Tinian.[53] Revised readiness dates for minimum facilities became: North Field (Tinian), 1 December; West Field (Tinian), 1 January; North Field (Guam), 1 February; North-

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west Field (Guam), 1 April; Depot Field (Guam), 20 November.[54]

But only on Saipan was the base development schedule even partially met. After earlier plans for two airfields, each with facilities for two groups of the 73d Wing,[55] had been abandoned, construction on Isley Field was pushed vigorously. High priority had been given to a temporary strip on the sites, and between 24 June and 6 August a 6,000- by 150-foot runway had been completed.[56] Then aviation engineer battalions, working on a 24-hour basis, extended the strip to 8,500 feet and widened it to 200 by 19 October.[57] All manner of difficulties beset the engineers: tropical rains beat down almost without abatement during July and August; roads from the coral pits became virtually impassable; and so many trucks broke down that men and equipment had to be diverted to the construction of a hard-surface road from the pits to the field. Enemy air raids and hard coral formations just beneath the surface, which made blasting necessary for all cuts, added to the unexpected difficulty.[58] When the first B-29 arrived on Isley Field on 12 October, final paving and other facilities were incomplete. By 15 December a second runway could be used by B-29's on a mission against Japan, but facilities at Isley Field were not substantially complete until April 1945.[59] In addition to the runways, dispersal areas consisting initially of 120 hardstands with connecting taxiways were constructed. After the operation of four groups from Isley Field had proved feasible, sixty additional hardstands were constructed for the sixty spare B-29's at Kobler Field. Eventually the hardstands were increased to 200, and 500-foot extensions were added to the east end of both runways. Completion of service aprons, warm-up aprons, fuel and bomb storage, and housing for personnel and for wing and group headquarters came slowly.[60]

Brig. Gen. Emmett O'Donnell's 73d Bombardment Wing led the way into the Marianas. An advanced air echelon of wing headquarters arrived from Colorado Springs on 24 August and the ground echelon by water on 16 September. The regular headquarters air echelon reached Saipan on 12 October; the four bombardment groups—497th, 498th, 499th, and 500th—and their four supporting air service groups followed during October and the first week in November.[61] Within less than one month, on 24 November, the first mission against Tokyo was flown.

Plans for the first twelve groups had been based on the assumption that only two groups of thirty B-29's each could operate effectively

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from a single airfield with two 8,500- by 200-foot runways, but experience soon showed that one airfield with two runways could serve an entire VHB wing. It had also been demonstrated, however, that minimum facilities for a B-29 airdrome could not be built in 100 working days by 2 aviation engineering battalions. Actually, four battalions had failed to complete the field in that time.[62]

Airdromes on Tinian were built by the 6th Naval Construction Brigade.[63] All construction forces were under the Seabee commander, to whom the island commander assigned work projects on the basis of priorities established by ComForwardArea. The two projected air bases were laid out on the sites of existing Japanese airstrips, which were rehabilitated first for use by fighters and heavy bombers. The original plan had provided for two VHB runways at each airfield, but following Harmon's proposals of 17 August, CINCPOA directed ComForwardArea to develop six runways on Tinian for six B-29 groups and to complete two runways at each of the two bases by 6 March.[64] Since the 313th Bombardment Wing was ready to vacate its training bases on 15 October, Harmon tried to hurry the construction.[65] His air engineers advised concentration on the building of four operational runways at North Field as a time-saving device, and Harmon requested the adoption of this plan.[66] Admiral Hoover protested that the proposal would only delay the completion dates,[67] but when Harmon continued to urge the change,[68] Nimitz on 28 November directed that the four runways at North Field be constructed with readiness dates for the first two strips advanced to 1 January and 15 January respectively.[69]

North Field consequently was developed with relative speed. The first 8,500-foot runway, along with 47 hardstands and taxiways, became usable 4 days ahead of schedule. The third runway was ready on 27 February, the fourth on 5 May. Paving and other facilities at North Field were not completed until early June,[70] because extra hardstands had to be built to implement the February decision to base the atomic bomb unit, the 509th Composite Group, on North Field and the March decision to augment each VHB wing with additional B-29's.

Meanwhile, aircraft and personnel of the 313th Wing began to arrive in December. By the end of February the wing headquarters, the four bombardment groups—6th, 9th, 504th, and 505th—and all supporting units were established on North Field.[71] The 509th Composite

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Group arrived at North Field in June to take over its specially prepared facilities.[72]

When in January 1945 it was finally decided to go ahead with the development of Tinian's West Field, the original plans for deployment and construction had been abandoned, and it was then settled to base two wings on Tinian, assigning to West Field one of the two additional wings deployed to POA by the JCS in December.[73] With construction proceeding rapidly, the first runway at West Field became operational by 22 March, the second by 20 April. By the end of April 190 hardstands, requisite taxiways, and storage facilities for fuel and bombs were substantially ready, and elements of the 58th Bombardment Wing had moved into place from CBI.[74]

Construction finally had got under way at North Field on Guam in November 1944. Here, all major construction forces, both Army and Navy, were assigned to the 5th Naval Construction Brigade, from which the island commander allocated work units on the basis of priorities set by ComForwardArea:[75] 1) harbor development, 2) CINCPOA headquarters, 3) supply facilities, 4) medical facilities, and 5) aviation development. These priorities obviously worked against the VHB construction program, and when Harmon saw that the program also had no precedence over theater aviation construction, he and his construction representative in the Marianas, General Thomas, were forced to press the interests of the Twentieth Air Force continuously with CINCPOA and his subordinates.[76]

Base development plans for Guam had originally provided for two operational airfields, North and Northwest, each with two standard VHB runways and facilities to support two groups each.[77] The air engineers, however, in anticipation of later augmentation, selected sites and prepared layouts for basing an entire wing on each airfield.[78] Consequently, when CINCPOA on 25 January finally approved the expansion of facilities on Guam to accommodate one of the two new B-29 wings committed to POA in December, construction proceeded without major revisions in plans.[79] Harmon's request for completion dates of 1 February and 1 April for two runways and facilities on North Field, and 1 May and 1 June for Northwest Field, was rejected by ComForwardArea, and the priorities assigned resulted in substantial delays in operations from the two air bases.[80]

Although the first runway on Guam was completed on 2 February, just one day later than Harmon's recommendation, to enable the 314th

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Bombardment Wing to fly its first mission on 25 February, the second strip on North Field was not paved to its full length until 1 May, while taxiways, hardstands, and service aprons were only partially constructed at that time.[81] ComForwardArea set 1 June and 1 July as estimated minimum operational dates for the two runways on Northwest Field. Ground was broken on 8 January, and work progressed on schedule until February, when the island commander transferred the two aviation engineer battalions employed there to projects of higher priority.[82] Since this action threatened to disrupt the movement of the 315th Bombardment Wing, Harmon made strong protests to Nimitz.[83] After temporizing for over a month, the latter on 31 March directed the island commander to defer various road and other low-priority projects and to assign sufficient construction units to Northwest Field to make the first runway operational by 1 June and the second by 1 July.[84] This schedule was met, and the 315th Wing's first missions were flown on 26 June, but many of the supporting facilities were not completed even when hostilities ceased in August.

On Guam only Depot Field had been given a high priority; construction got under way on 6 September 1944 with an estimated completion date of 1 November.[85] A portion of the runway had been cleared by the Japanese, the area was relatively flat, and the coral was soft compared to that at Saipan. Yet torrential rains and the diversion of construction units at critical times so slowed up the work that it was 10 November before the 7,000- by 150-foot runway was operational. By the end of February all primary buildings and storage facilities for three large air depots and the depot headquarters were substantially completed.[86]

Building requirements for headquarters of XXI Bomber Command and for housing the first three wings had been calculated by engineers of the Seventh Air Force. Since they were without previous experience other than that derived from meeting the requirements of heavy bombardment units, plans for housing and other headquarters facilities fell far short of minimum VHB needs.[87] There were, moreover, no stockpiles of building materials in the islands to cover these deficiencies, as all shipments were limited to items requisitioned for specific units in the area.[88] Also, each request to expand any VHB facilities had to be considered by Nimitz in terms of available shipping space. In the case of both the 58th and 315th Bombardment Wings, therefore, authorized construction material arrived in substantial

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quantities only after both had flown several major missions over Japan. That these two wings were housed at all was made possible by large-scale borrowing from other units, Army and Navy.[89] When the first units of the 73d Wing reached Saipan in August, their housing area had not even been cleared. Engineer aviation battalions eventually developed the housing areas, while flight-line facilities were constructed jointly by personnel from the engineer battalions and wing service groups.[90]

For the headquarters of AAFPOA and XXI Bomber Command on Guam, sites had been selected by Harmon just across the road from Depot Field in an area large enough to permit the two headquarters to be built side by side. When XXI Bomber Command personnel arrived on 5 December, they found the area cleared, the headquarters buildings erected, and one 500-man mess hall, latrines, washrooms, and signal, weather, and telephone buildings substantially completed.[91] In the AAFPOA area only the headquarters building and one quonset hut were ready for occupancy on 1 February, when Harmon's headquarters was officially opened.[92]

The original development plan for Iwo Jima called for three airfields and installations to accommodate the garrison.[93] The fields were to be designed to handle as many as ninety B-29's per day and to base five groups of escort fighters.[94] Central Airfield was to be built primarily for staging Superforts en route from the Marianas to Japan, South and North fields for fighters and bombers other than the VHB's.[95] In mid-March, after Iwo Jima was secured, the island was found capable of supporting a larger air establishment than had been anticipated, and on 25 April the island commander approved a new plan to convert Central Field into a huge airdrome with two B-29 strips, two fighter strips, and a combat service center.[96] Airfield construction on the volcanic rock was extraordinarily difficult, and the work went slowly until the commander of the 9th Naval Construction Brigade, in charge of the task, put his Seabees on a schedule of two ten-hour shifts daily.[97] Although the building program had not been completed by V-J Day, the strips were made serviceable early enough for them to support both B-29's and escort fighters during the climactic months of the strategic bombardment campaign.*[98]

Final construction of VHB bases in POA was under way in the

* For a more detailed account of the building of the Iwo Jima fields, see below pp. 594–97.

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Ryukyus at the end of the war. Plans called for a complete B-29 force in this area comparable to XXI Bomber Command. Designated in early planning as XX Bomber Command with headquarters in Okinawa, it became the Eighth Air Force, Pacific, in the July reorganization of VHB forces.* Air base construction plans, still in early stages of development on V-J Day, called for large airdromes and facilities on both Okinawa and Ie Shima to support twenty B-29 groups, a fighter command, a service command, and an air depot. In early operations from the Ryukyus both the fighters and air depot were under the control of FEAF, even though the Okinawa Air Depot had been assigned on 21 May to the Twentieth Air Force and attached to AAFPOA for administration and operation in the same manner as the Guam Air Depot.[99]

Original plans in the spring of 1944 had called for acceptance in POA of only three B-29 wings, with their supporting units.[100] Before another spring had passed there were five wings, all of them based within range of their Japanese targets, and the total strength assigned to Twentieth Air Force units in the Pacific on 16 July 1945, when Gen. Carl Spaatz assumed command of them as constituent elements of the United States Army Strategic Air Forces,† stood at 76,423 officers and men.[101] The following chart provides a ready list of the major organizations, together with their location and date of establishment in the theater:[102]

Organization	*Island Location*	*Arrival Date*
73d Bombardment Wing	Isley Field, Saipan	August 1944
Guam Air Depot	Harmon Field, Guam	November 1944
Hq. XXI Bomber Command	Guam	(Advanced headquarters arrived on Saipan, August 1944)
313th Bombardment Wing	North Field, Tinian	December 1944
314th Bombardment Wing	North Field, Guam	January 1944
Hq. DC, Twentieth Air Force	Guam	February 1944
VII Fighter Command	Iwo Jima	March 1945
Combat Staging Center	Iwo Jima	March 1945
58th Bombardment Wing	West Field, Tinian	March 1945
315th Bombardment Wing	Northwest Field, Guam	April 1945
509th Composite Group	North Field, Tinian	May 1945
Okinawa Air Depot	Okinawa	June 1945
301st Fighter Wing	Ie Shima	July 1945

* See below, p. 701.
† See below, pp. 684–88.

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For this achievement much of the credit must go to the faith and perseverance of General Harmon. When he took command in August 1944, the deployment of additional B-29 wings was very uncertain: as late as October Arnold informed Harmon that there were no plans for commitment of VHB forces to POA beyond those committed in April. Two newly organized wings, the 315th and 316th, were definitely planned for commitment to the Philippines as XXII Bomber Command.[103] Convinced that POA was the one area from which early mass bombing of Japan could be conducted, Harmon immediately urged Arnold that final commitment of the two wings be deferred until plans could be presented for using them first in the Marianas, and later possibly in the Ryukyus.[104] Without waiting for Arnold's concurrence, the AAFPOA staff prepared a plan for increased VHB deployment in POA which Harmon himself carried to CINCPOA at Pearl Harbor on 25 October.[105]

Nimitz agreed in principle with Harmon's proposals, but he refused to give more than cautiously qualified approval to the proposed plan. Pointing out that extreme shortages in both service troops and shipping facilities had seriously affected his ability to carry out operations projected by the JCS for early 1945, Nimitz said he was "very much opposed" to any augmentation of the VHB program which would increase these shortages; he would agree, if necessary aviation engineer battalions, Army ground and service forces, and shipping were made available to the theater.[106] The decision in Washington hung fire. Many believed that the Philippines, when secured, would afford better bases.[107] Harmon, however, continued to press upon Arnold his belief that the difficult engineering and logistical problems could be solved in time for all five wings to be established and operating from POA before the Philippines campaign could be completed.[108] On 26 December the JCS finally approved Harmon's plans and assigned the two wings to the Marianas.[109]

As coordinator of VHB interests in the theater, Harmon was under increased pressure in the days following the new commitment. Richardson complained that USAFPOA did not have service forces available to give logistical support to the two wings and asked for additional troops from the War Department. Nimitz supported Richardson and refused to allocate shipping priorities for the new wings until additional service troops were definitely committed to USAFPOA.

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After innumerable interchanges between theater agencies and Washington, Marshall cabled substantial approval of USAFPOA's requirements for service forces. Harmon was thus able to advise Arnold on 17 January that all major difficulties within the theater which might have impeded the arrival of the 315th and 316th Wings had been solved satisfactorily.[110]

Plans for deployment, however, underwent almost immediate revision.[111] On 16 January the JCS directed XX Bomber Command to vacate bases in China immediately and to send its 58th Bombardment Wing, in lieu of the 315th, to the Marianas in April. The JCS also directed that the readiness dates of the 315th and 316th Wings be deferred for thirty days and that the latter be sent to the Okinawa area.[112] Shortly thereafter the 316th Wing was definitely committed to the Ryukyus. As Ryukyus plans finally developed, XX Bomber Command Headquarters remained temporarily in India, while its only B-29 unit, the 58th Bombardment Wing, was reassigned to XXI Bomber Command and ordered to proceed immediately to the Marianas, where it was based on West Field, Tinian. The 315th was shifted to Northwest Field, Guam.[113]

To support VHB forces in the Ryukyus, the Okinawa Air Depot was established on 10 June and assigned to the Twentieth Air Force, though attached to AAFPOA for administration and operation in the same manner as the Guam Air Depot. The control of the Okinawa Air Depot, which was designed to service all AAF elements in the Ryukyus, became a bone of contention between the commanders of FEAF and AAFPOA, and its status was never definitely settled.[114] Further expansion of B-29 forces in the Marianas was still in the planning stage when the war ended, although two new bombardment wings, the 20th and 47th, were projected for the Ryukyus before the redesignation of AAFPOA as USASTAF on 16 July, and two additional wings, the 13th and 96th, were projected afterwards.[115]

Plans for sending five groups of VLR escort fighters to POA were considered as early as July 1944, but not until 31 January were Headquarters, 301st Fighter Wing, and the 413th, 414th, 506th, 507th, and 508th Fighter Groups definitely assigned to the Twentieth Air Force. While the January decision earmarked these aircraft to be eventually under the operational control of XXI Bomber Command, the War Department directive placed the groups under the temporary control of AAFPOA for the assault and consolidation phases of the Ryukyus

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and Iwo Jima operations, as were also the 15th, 21st, and 318th Fighter Groups of VII Fighter Command. In July AAFPOA's fighter command included two theater groups (the 15th and 21st) and two Twentieth Air Force groups (the 414th and 506th) which flew B-29 escort missions from Iwo Jima under the operational control of XXI Bomber Command. At the same time the 301st Fighter Wing (comprising the 413th, 507th, and 318th groups) was flying from Ie Shima under the operational control of the Seventh Air Force. The 508th Fighter Group, organized and equipped for B-29 escort missions, was retained on the island of Oahu and assigned to the 7th Fighter Wing for defense of the Hawaiian Islands.[116]

Rigid security regulations created problems in basing the atomic bomb unit in POA. Apparently AAFPOA was first informed of the high priority of the 509th Composite Group in late January 1945, when steps were taken to secure base facilities for the group on North Field, Tinian.[117] When a formal request was made to CINCPOA for the assignment of a priority for the required construction and shipping, approval was refused because the information furnished was unsatisfactory.[118] A naval officer from Washington, however, eventually gave CINCPOA a somewhat delayed briefing on the mission of the 509th Group, and by mid-June it was ready for operations from Tinian under the control of XXI Bomber Command.[119]

Command Relationships

In establishing the strategic bombers in the Marianas, General Harmon had one of the most difficult and complex assignments of the war. Besides the staggering burdens which his headquarters had to assume in connection with the construction of bases and moving the B-29 units into place, he himself was constantly beset with difficult and irritating jurisdictional problems. Harmon's unique and always indefinite status as the head of AAFPOA and deputy for Arnold aroused warm debate within the Air Staff as well as in OPD and in the theater.[120] His directive from the War Department[121] required him to deal with four major headquarters: those of CINCPOA at Pearl Harbor and Guam, of USAFPOA at Fort Shafter on Oahu, of Twentieth Air Force in Washington, and of XXI Bomber Command, first on Saipan and later on Guam. At no time were his relationships to these various headquarters precisely defined.

Only the fact that Nimitz was the theater commander and a very

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cooperative person was definite; all else was nebulous. Harmon had, it is true, a clear view of the relationship intended between himself and Richardson, the Army theater commander: the War Department directive of 10 July, coupled with General Marshall's letter to Richardson of the same date,* was a compromise designed to achieve Arnold's desire that AAFPOA be established independent of Richardson while preserving one senior Army command in form.[122] But Richardson's understanding was different. Harmon's role as deputy commander of the Twentieth Air Force also remained the subject of controversy and uncertainty. Aware of his dubious position and anxious that his responsibilities be clear from the start, Harmon had written Arnold shortly after the assumption of his command on 1 August that his "responsibilities in dual capacity as Comgen AAFPOA and Deputy Commander, Twentieth Air Force, are involved and difficult at best and any lack of clarity . . . in regard to the Twentieth Air Force will but add to the confusion."[123] Yet, his tragic death off Kwajalein nearly seven months later came as he was flying from Guam to Washington in a further attempt to clarify his status.

Harmon evidently expected that as deputy commander he would be a direct command channel between Washington and elements of the Twentieth Air Force in the theater, as indicated by the comprehensive AAFPOA Memorandum 20–2 of 23 August, entitled "Control of VLR Activities: Tentative." Herein Harmon outlined in minute detail roles, which were anything but minor, for himself and each of his headquarters staff agencies in both the administrative and operational activities of the Twentieth Air Force. "Control of VLR activities in the Pacific Ocean Areas will be exercised by Lieutenant General Harmon in his capacity as Deputy Commander, Twentieth Air Force," read the memorandum; the "Chief of Staff, the Deputy Commander for Operations, and the Deputy Commander for Administration, AAFPOA, will function in dual capacity in regard to their responsibilities for the Twentieth Air Force and AAFPOA." Obviously Harmon was planning a large, specialized staff which could assume broad administrative and operational control over B-29 units in POA.[124]

Although this "tentative" memorandum was never approved by Arnold, it did focus attention on conflicting views within the Air Staff of Harmon's role as deputy commander. Lt. Gen. Barney M.

* See above, p. 511.

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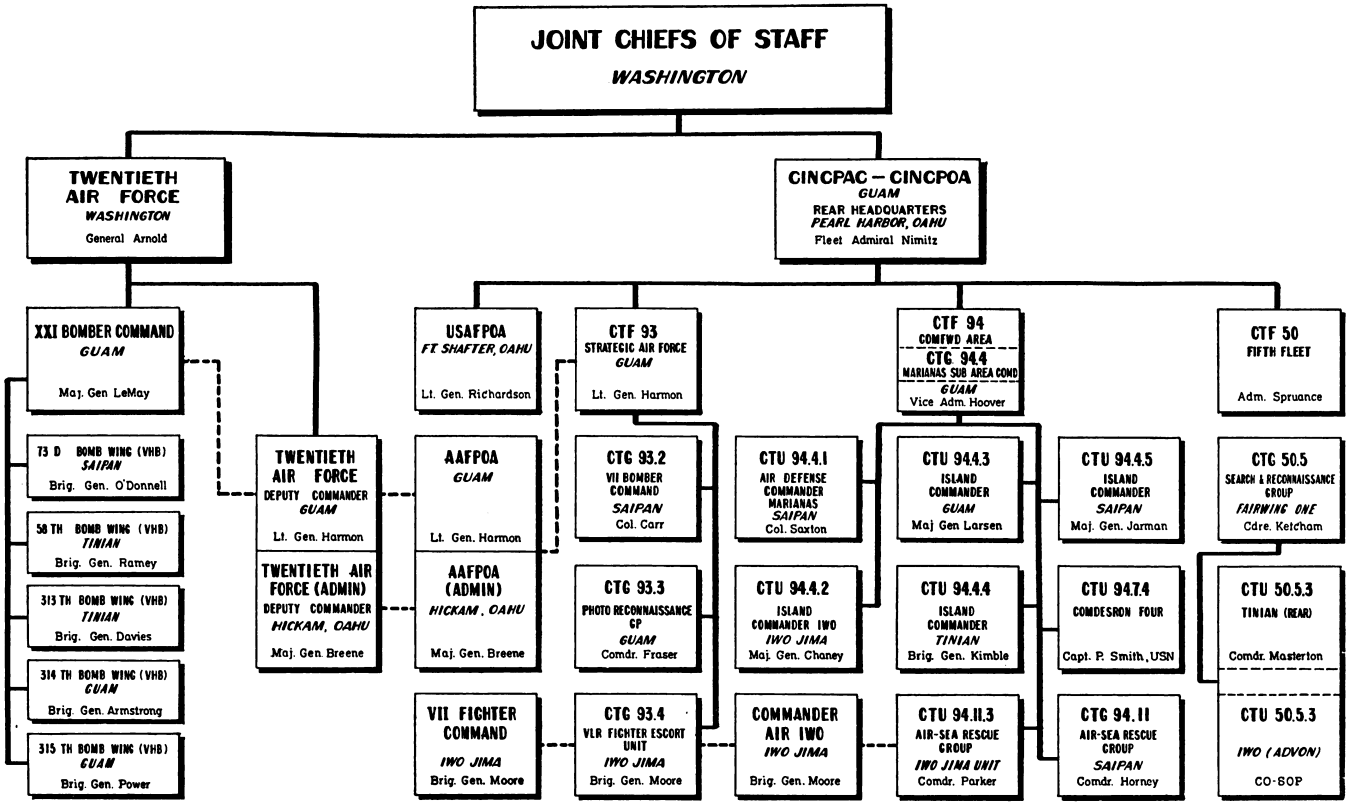
COMMAND RELATIONSHIPS IN PACIFIC OCEAN AREAS



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Giles, Chief of Air Staff, approved the AAFPOA memorandum and sent it to Brig. Gen. Lauris Norstad,[125] who had just succeeded Hansell as chief of staff of the Twentieth Air Force. Norstad objected. Giles thereupon agreed that it be held in abeyance until Hansell, the newly designated commander of XXI Bomber Command, could confer with Harmon in the theater.[126] Meanwhile, Norstad prepared a paper challenging Harmon's ideas as revealed in both the AAFPOA memorandum and in various messages. Pointing out that Harmon's proposed deputy commander for operations was directed to organize a "Twentieth Air Force Division" charged with responsibilities "completely covering all phases of operations of the XXI Bomber Command," Norstad said this was in direct conflict with initial thinking in the Air Staff. Moreover, Norstad added, Harmon's proposed deputy commander for administration duplicated XXI Bomber Command's staff for supply and maintenance. "Under the initial concept as developed here," wrote Norstad, "the XXI Bomber Command was organized essentially as an Air Force. It has a well-established, fully rounded headquarters capable of performing all the functions essential to an air force for operations and administration."[127]

Arnold's decision was sent to Harmon on 22 September: nothing must be done, he said, to "affect the approved concept of a strategic air force whose operations are controlled from Headquarters, Twentieth Air Force, Washington." But beyond retaining "direct operational control," it was his intention, Arnold continued, to decentralize controls as far as possible, and to this end he had requested the War Department to grant him broad administrative authority over elements of the Twentieth Air Force in POA which he expected to delegate to Harmon as his deputy.[128] Arnold rejected Norstad's recommendation that XXI Bomber Command operate its own air depot, stating that service activities were Harmon's responsibility and that the Guam Air Depot and associated units would be assigned to the Twentieth Air Force and attached to AAFPOA for operations.[129]

The function of Harmon's headquarters was further clarified in a Twentieth Air Force office memorandum of 23 October. Reiterating the policy of administrative decentralization and the retention of direct operational control in Washington, the memorandum reflected both OPD and Twentieth Air Force opinion that Harmon's appointment as deputy commander did not constitute the establishment in

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POA of an organizational entity; Harmon must be considered as an individual. While admitting that the staff of AAFPOA Headquarters would be used by Harmon as deputy commander, the memorandum specifically rejected the concept of a dual headquarters.[130] Harmon described this interpretation as beating around the bush and wrote Giles that whatever the Washington view, AAFPOA "is in fact a combined headquarters and functions for both headquarters."[131]

On 22 November the War Department finally delegated to Arnold specific administrative authority over Twentieth Air Force elements within the theater, another major victory for the concept of an independent air force. Arnold was granted exclusive administrative jurisdiction over VHB forces in POA in connection with the relief and assignment of personnel, appointment of officers, demotion and reclassification of officers, detail of officers to special service schools in the United States, promotion of personnel through the grade of colonel, conferment of awards, and review of final acts of medical disposition boards.[132] On 16 December Arnold redelegated most of this authority to Harmon as his deputy commander; and in conformity with Arnold's instructions, Harmon made a further delegation to XXI Bomber Command.[133] The net result of this distribution of Twentieth Air Force administrative authority was to increase materially the importance of Harmon's role as deputy. But Arnold emphasized to Harmon that while AAFPOA Headquarters was assuming part of the load for which XXI Bomber Command Headquarters had been originally designed, the command must be left free to continue its essential headquarters functions of administration, supply, and maintenance.[134]

Harmon, however, had ambitions for his command to be more than an administering, servicing, and coordinating agency for the Twentieth Air Force. He evidently wanted control over all combat operations of AAF aircraft under CINCPOA and a measure of, if not complete, control over VHB operations. In the first, Harmon gained some success. On 6 December Nimitz named him commander of the Strategic Air Force, POA, which, as Task Force 93, had operational control of all Army and Navy land-based bombers and fighters belonging to the theater.[135] And the decision to base five VLR escort fighter groups in POA seemed to give Harmon an opportunity to extend his operational control to elements of the Twentieth Air Force.[136] Nimitz had agreed to accept the five fighter groups on the understanding that they would perform defense and tactical missions as well as provide

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escort cover for the B-29's over Japan. This meant that for the assault phases of the operations against Iwo Jima and Okinawa these fighters constituted a part of a task force under the tactical commanders and reverted to their normal commanders only after the islands were occupied. Theater requirements thus dictated that the VLR fighters be placed under Harmon's operational control during the assault phases, and Arnold was in full agreement with this temporary assignment.[137] Harmon also wanted "the operational control of long-range fighters used in support of VLR operations,"[138] but Arnold informed Harmon on 23 January that he had decided to assign the fighter groups to the Twentieth Air Force and to attach them to AAFPOA for operations only during the assault and consolidation periods of the impending operations against Iwo Jima and Okinawa.[139] Harmon protested that if operational control of the fighter groups were not retained by him—or, at his discretion, vested in the commander of XXI Bomber Command or other subordinate commanders—the planned operations would be jeopardized.[140] Maj. Gen. Curtis E. LeMay, who had replaced Hansell as head of XXI Bomber Command on 20 January, countered with a strong message to Washington insisting that he must have absolute operational control of the fighters flying escort for his B-29's.[141] LeMay's claim was promptly upheld, and Arnold reaffirmed his decision to limit Harmon's operational control to the assault and consolidation of Iwo and Okinawa.[142]

Harmon's headquarters listed objections to the Washington decision in strong terms. Fundamental was the contention that the fighter groups would be literally frozen except for occasional long-range missions, since XXI Bomber Command could not operate the aircraft for any purpose other than escort missions without a serious infraction of the principle of unity of command. Moreover, as Nimitz' commander of the Strategic Air Force, POA, and as Arnold's deputy commander of the Twentieth Air Force, Harmon was in a unique position to insure that adequate fighter support be provided and also that every aircraft be used to its full capacity in winning the war.[143] To settle this issue and for other reasons, on 25 February Harmon departed by air for Washington along with his chief of staff, Brig. Gen. James R. Anderson, and his executive to the deputy commander for operations, Col. William Ball. The aircraft reached Kwajalein but disappeared without trace after taking off for Johnston Island some

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1,400 miles away. No word of the plane or its occupants was ever received.[144]

As a ranking air officer Harmon had justifiable ambitions to command the B-29 forces in the war against Japan. His concept of his role as deputy commander, as seen in AAFPOA Memorandum 20–2, further reveals that he planned a headquarters not simply to service the VHB forces but to operate and control them when the opportunity came. Yet Harmon's status as commander of AAFPOA under Nimitz literally disqualified him for operational control because it would jeopardize the Twentieth Air Force's position in relation to the Navy. Harmon was expected, of course, to coordinate operational and administrative problems with Nimitz, which he did with remarkable success, but Arnold was determined to protect the independence of the Twentieth Air Force as an operating agency under his direct control from Washington. Brig. Gen. Richard C. Lindsay of AC/AS, Plans, wrote Harmon the Air Staff's appraisal of the problem:

> Having the fullest confidence in you personally and recognizing Admiral Nimitz's fine co-operative spirit, [Arnold] is apprehensive of the compromising action that could be taken by CINCPOA's staff with relation to the operation of the Twentieth Air Force units should you and your staff be placed in the direct functional channel of operational control.[145]

If fear of losing control of the B-29's to the Navy was paramount, of almost equal weight was the need to keep fluid the air command in the Pacific, for in the same period during which Harmon was urging clarification of his authority, the JCS were wrestling with the problem of reshaping the MacArthur and Nimitz theaters for the final phases of the war against Japan. Any premature commitments might have compromised the equal status which the AAF sought in the Pacific reorganization. Also, there were strong and, needless to state, ambitious personalities involved in what was a major contest for authority and prestige within the AAF.

The loss of General Harmon and the key members of his staff was a serious blow to plans for the strategic air war from POA. Fortunately, many of the basic decisions had been made, and the complex problems of establishing the first independent air force in the Pacific and coordinating it with other commands had been at least partially solved. On 2 March 1945 Maj. Gen. Willis H. Hale, AAFPOA deputy commander for operations, assumed Harmon's positions, and he in

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turn was succeeded on 4 May by Lt. Gen. Barney M. Giles.[146] Even before the arrival of Giles the status of the strategic air force in POA was being clarified. The over-all command organization had had its answer also, for on 5 April POA and SWPA were merged, with MacArthur becoming supreme commander for all Army forces and Nimitz for all Navy forces. The only exception was the Twentieth Air Force which retained its independent position under the JCS. Before Giles departed for POA, the question of shifting operational control of the B-29 forces from Washington to the Pacific was under consideration in the Air Staff, and one of the missions of Giles and his deputy, Maj. Gen. Laurence S. Kuter, was to prepare the way for the establishment of USASTAF on 16 July.[147]

AAF units in POA, including the Twentieth Air Force, operated within the orbit of a theater under the supreme command of Admiral Nimitz. Since 1942 Nimitz had held two titles: Commander in Chief, United States Forces, Pacific Ocean Areas, as the executive agent of the Joint Chiefs of Staff; Commander in Chief, Pacific Fleet. The only exception to his supreme command authority resulted from the JCS action of 1 April 1944 which had named General Arnold as its executive agent in commanding the Twentieth Air Force. This violation of the principle of a unified theater command applied only to the "employment, administration, missions, objectives, transfers, etc.," of the B-29 forces and related units, and left untouched CINCPOA's responsibility for and jurisdiction over building and defending bases, logistical support of units, and establishing uniform administrative policies throughout the theater.[148] The fact is that the Twentieth Air Force, in spite of its "independence," found itself subject to theater controls and entirely dependent upon theater services and priorities, once its units moved into POA.

To coordinate and administer his authority, CINCPOA maintained a joint staff at Pearl Harbor and, after its capture in July 1944, another at Guam. Command controls were exercised by CINCPOA in the rear area of the Hawaiian Islands almost exclusively through conventional Army and Navy organization, but special combined or joint commands in the form of task forces functioned in the forward areas. In the rear area Richardson had primary responsibility for all Army activities, while in the forward areas, including the Marianas and Iwo Jima, command over all forces and territory passed to Vice Adm. J. H. Hoover as Commander, Forward Area, Central Pacific. An is-

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land commander was charged with control of "all activities, services, troops, and installations on the atoll, island, or islands he is designated to command."[149] The island commanders with whom the AAF and Twentieth Air Force units were directly concerned were Maj. Gen. H. L. Larsen (USMC) on Guam, Maj. Gen. J. L. Underhill (USMC) and later Brig. Gen. F. V. H. Kimble (USA) on Tinian, Maj. Gen. Sanderford Jarman (USA) on Saipan, and Maj. Gen. J. E. Chaney (USA) on Iwo Jima. These commanders were directly under Admiral Hoover who reported only to the theater commander. The Army administrative channel to its units under the island commanders was from USAFPOA and the Western Pacific Base Command through the Army Garrison Force which was the controlling Army command on each island. For the Twentieth Air Force the island commander was a key figure: through him basic support on the islands was controlled.

Between AAFPOA and CINCPOA differences on policy and procedure inevitably arose, but relations between the AAF and Navy were consistently cordial.[150] Between AAFPOA and USAFPOA, on the other hand, there were protracted and often petty jurisdictional disputes, the basis for which may be found in the War Department directive of 10 July.[151] Evidences of conflict appeared even before the formal activation of AAFPOA on 1 August 1944. On 18 July Richardson's chief of staff, Brig. Gen. Clark L. Ruffner, prepared a memorandum stating that the War Department directive meant that while Harmon was responsible only to Nimitz for the preparation of plans, operation, training, and disposition of his forces, he would have to "integrate" these functions with USAFPOA.[152] Clearly, USAFPOA expected to retain a veto power over Harmon in these special areas. But Ruffner went further: even in connection with Twentieth Air Force activities, requests made by XXI Bomber Command would "of necessity" have to be referred to Richardson for "integration" with USAFPOA's "responsibilities and means."[153] Harmon had a sharply different interpretation, contending that the phrase "responsible directly to CINCPOA for all matters pertaining to preparation of plans, operation, training and disposition of his forces" was used advisedly, and the word "operation" was definitely understood to include functional activities of all forces, including service, as well as combat. The term "forces," Harmon insisted, was just as definitely inclusive of service units.[154]

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The controversies over prerogatives between AAFPOA and USAFPOA consumed much of the energy of the two headquarters during August, September, and October.[155] Specific clashes between the two commands arose over the assignment of air service units arriving in POA, the determination of the location of the 6th Night Fighter Squadron in Hawaii, the modification of a special B-24 aircraft for Maj. Gen. Frederick Gilbreath, commander of the South Pacific Base Command, and Richardson's letter of instructions to Harmon on 1 August. Only the first of these issues, however, was of primary importance. By 10 October 1944 eight aviation engineer battalions, two ordnance ammunition companies, and one signal construction battalion—all Twentieth Air Force troops—had been assigned by the War Department to USAFPOA to support VHB projects;[156] it was expected that they would be reassigned immediately to AAFPOA on arrival in the theater. But Richardson in several instances temporarily diverted aviation engineer battalions to other activities. When Harmon vigorously protested, the Air Staff asked the War Department to assign all such units to the senior AAF commander instead of the senior Army commander in the theater.[157] The War Department refused to modify its policy of a unified Army command, insisting that the system was working satisfactorily in other theaters.[158] Nevertheless, Harmon actually won his fight in fact, if not in theory, for on 18 November Richardson announced that in the future all AAF troops, including Arms and Services with the AAF, when assigned by the War Department to USAFPOA, would be reassigned immediately to AAFPOA.[159] Some disregard of this policy existed as late as May 1945,[160] but it would be a distortion of fact to suggest that all was conflict between AAFPOA and USAFPOA. Actually, there were relatively few basic points at issue, and the two headquarters usually resolved these at the top level. Harmon's primary contacts, moreover, were actually not with Richardson's headquarters so much as with subordinate echelons, such as the Central and Western Pacific Base Commands and the Replacement Training Center with which AAFPOA was authorized to deal directly.

Complaints regarding control of AAF units in POA, other than those of the Twentieth Air Force, more frequently involved protest at their incorporation into joint task forces under Navy control. At no time did the commander of AAFPOA possess operational control of the aircraft assigned to his command. All combat missions were

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flown on orders of a task force commander responsible directly to CINCPOA. A major concession to the AAF had been made on 1 May 1944, when the commander of the Seventh Air Force, General Hale, was named to command as ComAirForward the Shore-Based Air Force, Forward Area, a joint task force designated as Task Force 59.* Under this command came all shore-based aviation, including bombardment, fighter, and troop carrier (except ATC and NATS) in the forward area of the Central Pacific. But Hale as ComAirForward did not have access to CINCPOA and was, in fact, directly subject to the orders of Hoover, ComForwardArea, for assignment of missions and designation of objectives. This destruction of the integrity of the Seventh Air Force had been resisted without avail by both Richardson and Hale in the period before the arrival of Harmon. Until its inactivation on 6 December 1944, Task Force 59 continued an unhappy existence, caused in no small measure perhaps by Hoover's reputation for hostility toward the AAF and "high-handed disregard of normal processes of Army administration."[161] A major complaint of AAF commanders was Hoover's insistence on employing heavy bombers on strikes against shipping in violation of AAF doctrine and in spite of continuous AAF protests.[162]

Concurrent with the disbandment of Task Force 59, the Strategic Air Force, POA, was established as Task Force 93, under the command of Harmon.[163] With operational control of all Army and Navy land-based bombers and fighters in the combat area and responsibility directly to CINCPOA, this appointment apparently represented a major victory for Harmon and the AAF. But Task Force 93 gradually lost control of the Navy aircraft formerly under ComAirForward as well as of various AAF units. The shrinkage was under way by February, and by April only VII Bomber Command (Task Group 93.2) and VII Fighter Command (Task Group 93.4) remained. Then in June the bomber groups of VII Bomber Command were assigned to the Tenth Army on Okinawa, leaving only VII Fighter Command to the Strategic Air Force.[164] Moreover, Harmon's control of VII Fighter Command was limited, since the aircraft of Task Force 93 were assigned to Hoover as ComForwardArea with first priority for island defense. The Strategic Air Force's control had been further reduced on 25 May, when VLR escort missions under the operational control of XXI Bomber Command were made the pri-

*See Vol. IV, 675.

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mary mission of VII Fighter Command and defense of the islands secondary.[165] Strategic Air Force, POA, was finally disbanded on 3 August 1945, two days before VII Fighter Command, the last of its elements, was assigned to the Twentieth Air Force under USASTAF.[166]

Wastage of AAF manpower seemed to be inherent in this joint task force system employed by the Navy in POA. Since CINCPOA had operational control of all AAF combat aircraft, the large operations and intelligence headquarters staffs provided under War Department tables of organization for all echelons of its AAF commands were largely without function. With the activation of AAFPOA this wastage of personnel was further compounded. Two large operations and intelligence staff sections, fully manned for combat activities, thus spent months in almost complete frustration and idleness because the combat units of their commands had been detached and assigned to task forces which had their own complete staff sections. Not until the Seventh Air Force was transferred to FEAF in July 1945* to begin operations from Okinawa did its headquarters really justify its existence. AAFPOA, of course, had a vital servicing and administrative mission, but there was little, if any, excuse for its large operations and intelligence staff sections at any time prior to its redesignation as USASTAF in July 1945.[167]

Logistical Support in the Marianas

In committing the B-29's to the Marianas, the JCS had superimposed a striking force incapable of self-sustainment upon the theater's logistical structure. Although Nimitz was specifically charged only with the "logistical obligation" for support of Twentieth Air Force units in his theater, an exact delineation of logistical responsibility for the strategic bombers in POA remained a subject for debate until the end of hostilities.[168] It had been impossible to settle all details in the meetings of the Frank Committee in May 1944, and the settlement of questions, which were not definitively disposed of there necessarily depended upon action by the theater commander.[169] The XXI Bomber Command was unique in that it carried on its operations without an air service command, without control of an air depot, without aviation engineer battalions or ordnance companies, and with the barest minimum of work and service troops. The operational commander of

* See below, p. 694.

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the B-29's looked to CINCPOA for necessary shipping, construction, and maintenance of airdromes; to USAFPOA for all Army supplies; and to AAFPOA for air technical supplies and depot support. Harmon and his successors had no prerogatives of command over logistics, and were in the "anomalous position of having to deal with uninformed staffs on the basis of agreement."[170]

The logistical channels which resulted were circuitous, cumbersome, and confusing, and few people fully understood their labyrinthine ramifications. For example, the Western Pacific Base Command (Army) supplied dry rations for all forces ashore, while a Navy agency, Service Forces, Pacific Fleet, furnished all fresh provisions. All gasoline, oil, and lubricants were provided by ComForwardArea, through Navy channels. Clothing, general equipment and supplies, and construction equipment were obtained by Army units through the Army Garrison Force, whose commander sometimes wore a second hat as island commander. ComForwardArea (later changed to ComMarianas) in the person of Admiral Hoover was the logistical focal point for all forces in the Marianas, and his headquarters processed all requests for support, set construction priorities, and controlled road and port traffic.[171]

To obtain construction of an air installation for the AAF in the Marianas, a requisition was routed first to the Army Garrison Force, where it was screened to determine if other Army facilities on the island could be substituted; next it went to the island commander who determined if other island facilities could be substituted; and finally it passed to ComForwardArea who could approve or disapprove. If approved, the requisition was returned to the island commander who assigned a building priority and directed an aviation engineer or Seabee unit to do the work. But construction materials had to be obtained from the Army Garrison Force and, if not on hand, had to be requisitioned through the Western Pacific Base Command from the mainland. Finally, a shipping priority and a vessel allocation had to be secured from CINCPOA at Pearl Harbor before the material could be shipped. It is not surprising that construction projects which took a few hours to complete manually sometimes required weeks to process administratively, nor is it extraordinary that the request for construction of a building for the headquarters area of XXI Bomber Command on Guam bore twenty-six separate indorsements before it was approved. It is also small wonder that this system was criticized as a

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"tangled web of split channels for such debatable things as technical, administrative, and operational control," and as one which "promoted uncertainty, delay, and reluctance on the part of intervening echelons to assume responsibility."[172]

Yet, the intertwined system must have worked better than the foregoing description suggests, for after the commitment of the B-29's to POA, there commenced the most remarkable build-up of AAF strength witnessed in a like period during the war. Personnel and aircraft in great numbers were established in the theater on the largest airdromes ever constructed and were supplied with a vast tonnage of bombs, gasoline, and other materiel. The expansion of personnel is indicative of this growth. In August 1944 AAF strength in the theater was 51,320, but by mid-July 1945 the influx of VHB and supporting AAF units brought it to 166,345.[173] Of this number, 76,423 officers and men were distributed within the Twentieth Air Force as follows: 59,910 in the five wings and special units assigned to XXI Bomber Command; 249 assigned to XX Bomber Command; 16,264 in the Guam and Okinawa Air Depots, VII Fighter Command, 301st Fighter Wing, and other special VLR supporting units attached to AAFPOA. Assigned to the theater commander and directly under AAFPOA were additional AAF units numbering 89,922 distributed as follows: AAFPOA Headquarters and separate units, 42,942; Hawaiian Air Depot, 1,845; Guam Air Depot, 2,898; VI Air Service Area Command, 14,267; VII Fighter Command, 7,585; 7th Fighter Wing, 5,315; and Seventh Air Force, 15,070.[174]

Excluding the Twentieth Air Force combat wings, the AAF expansion had been largely in service troops. While the Twentieth Air Force and AAFPOA together were made up of 117,545 combat and 48,800 service troops, the Twentieth's division was 65,083 combat and 11,340 service, and AAFPOA's was 52,462 combat and 37,460 service. Since only 2,046 of the Twentieth Air Force service troops were assigned to XXI Bomber Command and the others attached to AAFPOA, the service forces subject to various controls of AAFPOA totaled 46,754 in mid-July 1945.[175] Many of these troops, however, were included in the thirty-three aviation engineer battalions organized by July 1945 into the 927th Engineer Aviation Regiment on Guam, the 933d Engineer Aviation Regiment on Okinawa, and the 935th Engineer Aviation Regiment on Ie Shima.[176]

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There was also a corresponding build-up of aircraft in the theater. From 999 aircraft of all types in August 1944 the number rose to 3,006 on hand in mid-July 1945, with the change in types and models of aircraft as significant as the increase in numbers. There had been no B-29 aircraft in August 1944, but there were 59 by the end of November and 985 on 31 July 1945—the build-up had averaged more than 100 per month after November. After reaching a peak of 177 planes delivered in April, it had leveled off with 94 in May, 147 in June, and 110 in July. In addition, 451 P-47N's arrived between March and July, while the P-51's increased from 8 in November to 348 the following July. Other important additions by July 1945 were 74 P-61's, 123 B-26's, and 27 F-13's. Revealing still further the changing character of the air war in POA, the number of B-25's and B-24's remained approximately at the August 1944 levels, and the once common P-38's and P-39's had virtually disappeared.[177]

In fact, the flow of B-29 aircraft to POA was so rapid that it outstripped the arrival of combat crew replacements. While 1,437 B-29's and 42 F-13's were received in the theater by the end of the war, only 1,892 crews arrived—an excess of but 413 crews over aircraft.[178] With intensified operations beginning in March, the shortage of combat crews became a critical limiting factor. As maintenance and supply steadily improved, it became possible to operate the B-29's 114.9 hours per assigned aircraft in March and to plan for utilization of the bombers to a maximum of 156 hours per assigned aircraft by December 1945.[179] Combat crews, however, could be flown no more than 95 to 100 hours per month and that for short periods only, while 75 hours per month was considered to be the maximum for extended operations.[180] The authorized ratio of crews to aircraft was 1.25, but this was further reduced for combat use because of shakedown and lead crew training, which amounted to 10 per cent of all B-29's flying in the Marianas.[181] Obviously, sustained maximum use of available aircraft would rapidly deplete the crew strength unless the ratio were increased. General LeMay repeatedly urged Washington to establish a ratio of two combat crews per aircraft, and when warned that the training program could not be accelerated to provide immediate relief, he asked and won approval for a maximum bombing program which if long sustained would have bankrupted his command of crews.[182] Suggestions that B-17 and B-24 crews from Europe be used

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after six weeks' transition flying in B-29's in the United States went no further than the planning stage, and the acute shortage of combat crews had not been solved at the war's end.[183]

In contrast to the Twentieth Air Force's operations in China-India, where the supply of gasoline, spare parts, bombs, and maintenance facilities was always inadequate, only two supply obstacles imposed really serious limitations on B-29 operations in the Pacific: 1) a serious shortage of incendiary bombs, following the March fire raids, which continued until late summer, and 2) shortages of B-29 spare parts which kept many aircraft on the ground in the period from November to March. It must not be assumed that there were no other supply problems, for there were indeed a multitude of them, but only these two caused real delays in the strategic bombing of Japan.[184]

Various explanations have been offered for the exhaustion of the supply of incendiary bombs in the Marianas in the spring of 1945. Yet the answer seems to be relatively simple. LeMay's decision in March to send all available B-29's with maximum loads of fire bombs on low-level raids apparently made the shortages inevitable, for this was a radical departure from the high-level missions with a preponderance of high-explosive bombs which the planners had anticipated. It was the responsibility of AAFPOA to requisition ammunition for all AAF aircraft in the theater, and requirements were estimated six months in advance on the basis of the number and types of missions anticipated, the types of bombs available, and the shipping allocated.[185] In December 1944 estimates of bomb requirements for the first six months of 1945 were projected by AAFPOA on the following assumptions: 1) that there would be 4 B-29 groups operating during January, 8 during February and March, and 12 from April through June; 2) that 60 per cent of the total tonnage of bombs carried would be high explosives; and 3) that 5,000 tons of shipping per wing would be available monthly.[186] A further assumption was that the bomber missions would continue to be high-level ones on which the B-29's had averaged only 5,473-pound bomb loads in November and 8,048 in December.[187] The planning was entirely unrealistic in terms of the March operations. Actually 388 bombers were assigned by March,[188] 78.3 per cent of the total weight of bombs carried during the month were incendiaries and only 21.7 per cent high explosives, and low-level bombing tactics had increased the average bomb load to 12,295 pounds per aircraft.[189] Other planners were equally

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inaccurate in their estimates: XXI Bomber Command estimates as late as 8 February were based on a total bomb requirement of only 3,000 tons per wing per month divided into 40 per cent incendiary and 60 per cent high explosive,[190] while as late as 11 March Twentieth Air Force Headquarters in Washington estimated that only 33 per cent of the B-29 bomb tonnage would be incendiaries.[191]

The shortage of incendiaries in the Marianas became the source of a relatively heated controversy,[192] and though estimates were quickly adjusted to changed conditions, the pipeline for supplies was three months long. By the end of March the B-29 planners in POA were estimating monthly bomb requirements at 10,000 tons per wing for a total of 50,000 tons for the command;[193] by May planners in Washington had raised the estimates to 15,000 tons per wing per month or a total of 75,000 tons equally divided between incendiaries and high explosives.[194] To avert future shortages, General Arnold insisted that a maximum level of 4 months' supply of bombs, based on estimated monthly expenditures of 75,000 tons, be stockpiled in the theater, or a total storage of 300,000 tons equally divided between the 2 types of bombs. This was in response to LeMay's contention that the JCS directive requiring the bomb stockpile to equal two months' expenditures should be interpreted to permit a maximum effort restricted entirely to either bomb type.[195] CINCPOA interpreted the JCS requirement to mean a stockpile based on the total possible expenditure of all types of bombs and refused to raise storage levels above 150,000 tons.[196] LeMay protested so strongly that Maj. Gen. Junius W. Jones, AAF Air Inspector, made an analysis of the bomb situation in the Marianas; he reported on 5 July 1945 1) that the current supply of bombs on hand was adequate for the months of July and August, 2) that estimates indicated the 1 September supply of bombs would be 125,567 tons exclusive of August receipts, and 3) that assuming the projected missions to be 6,000 in September, the total consumption of bombs would not exceed 50,000 tons for the month.[197] Since the total tonnage, including bombs and mines, dropped by the B-29's from November 1944 through August 1945 amounted to only 157,502 tons, and the maximum for 1 month was 42,711 in July,[198] it is difficult in retrospect to find fault with the Air Inspector's conclusion that there was no present or future shortage in sight.[199] The fact is that the bomb scarcity had been solved by June, when the supply pipeline caught up with planning.[200]

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It was difficult for XXI Bomber Command to function at full efficiency without prerogatives of command over the procurement of bombs and aviation gasoline and other services which were vital to its bombing operations. It experienced some concern over the fact that, while conducting the only continuous combat operations from bases in the Marianas, its assigned priority for the construction of an air base for the 314th Bombardment Wing on Guam was 91, for the 315th Wing 95, and for the headquarters area of XXI Bomber Command itself 110—all well behind the construction of roads and numerous naval installations.[201] But Nimitz, while meeting many other demands upon his resources, kept the B-29's well supplied with fuel: they never suffered any shortage of that essential item, and by July 1945 storage facilities for 892,000 barrels existed in the Marianas and Iwo Jima.[202] Always, however, there was a shortage of personnel in the theater to handle shipping. On 1 June 1945 there was, for example, a backlog of 260,000 short tons aboard ships in Guam harbor waiting to be unloaded, while other vessels were being held at Eniwetok awaiting clearance before proceeding to Guam.[203] This deficiency of troops to handle supplies became particularly acute during the Okinawa operation and was further accentuated as the war against Japan was pressed on the sea and ground as well as from the air. But it should be remembered that AAF personnel never amounted to more than about 10 per cent of those looking to Nimitz for logistical support.[204]

The supply and maintenance of items peculiar to the AAF were the logistical responsibility of the Twentieth Air Force according to the JCS directive of June 1944, but here again VHB forces were dependent upon theater agencies. To AAFPOA was delegated responsibility for supply through the Guam Air Depot of the more than 300,000 B-29 parts and other technical AAF equipment.[205] The normal command channels ran from XXI Bomber Command to AAFPOA to the Pacific Overseas Air Technical Service Command (POATSC) at Oakland, California, where the supplies were procured and shipped via ATC or water to the theater. POATSC's claim that the elapsed time on critical parts shipped by air was often no more than six days from the date of the wing's requisition until installed in the aircraft was doubtlessly true, but only in exceptional cases;[206] it is certainly true, however, that ATC delivered many items with a lapse of no more than eleven days.[207] Transportation was in fact consistently

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prompt once the obstacles of command channels permitted the supplies to reach the air terminals. Serious shortages in both air force and other supplies were often the result of unpredictable supply requirements which arose from changes in tactics and a steadily increasing volume of sorties rather than failure by procurement or transportation agencies.[208]

But the Guam Air Depot was not even organized, much less ready to provide support to the B-29's, when the first strike against Japan was launched on 24 November. The first troops and supplies for the depot were not unloaded until 9 November, at a time when construction work on warehouses, offices, and quarters had scarcely started. Seabee and aviation engineer troops were busy on airdrome, harbor, road, and other high-priority projects, and all efforts by Harmon to secure earlier construction dates for the depot had been futile. The result was that thousands of boxes were stacked with little effort at classification along a muddy road some 75 feet wide and 5,000 feet long known familiarly as the "Mile of Supply."[209] With no alternative but to provide for themselves, clerks and telephone, radar, propeller, and engine repair men, not to mention other specialists, were put to work constructing warehouses, offices, housing, showers, and latrines.[210] It was February before the depot was ready to give fourth echelon maintenance to the combat wings,[211] and April before some of its floating aircraft repair and maintenance units arrived.[212] The XXI Bomber Command was thus forced during the first weeks of strategic bombing to depend upon its own meager service personnel for purposes never contemplated by the Twentieth Air Force planners.

If delay in depot support was the compelling reason for drastic changes in the original concepts for supplying and maintaining a B-29 combat wing, there were other factors which influenced organizational changes. Problems arising from the housing of over 12,000 personnel on one combat base and from operating over 180 four-engine aircraft from a single airdrome were unique, and solutions were possible only on the basis of actual experience in the Marianas.[213] In any event, General Hansell took steps in early November to adapt the supply and maintenance procedures of his B-29 command to existing conditions.[214] As finally developed, rigid controls over all supply and maintenance activities of XXI Bomber Command were centralized under the deputy chief of staff for supply and maintenance, a

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position filled by Col. Clarence S. Irvine from November 1944 until the end of the war. Within each of the five wings there was a similar concentration of authority in a deputy chief of staff for supply and maintenance who operated through a supply controller and a maintenance controller. The primary departure from orthodoxy was in the elimination of the squadrons as operating entities and the merger of the groups into work pools. Under the wing supply controller was grouped all supply personnel for the operation of a wing supply control center, which was the central agency for requisitions, records, warehouses, and issues for all units of the wing based on the airdrome.[215]

The conventional practice of attaching a service group to each bomb group to form a combat team for maintenance was discarded in favor of service centers under the wing maintenance controller. The pattern followed was to pool the personnel and equipment of two service groups into a service center with primary responsibility for the maintenance of the aircraft of two bomb groups. Production-line techniques were introduced with centralized shops manned by technicians for the maintenance of engines, armaments, communications, radar, propellers, and parachutes. Also, since work loads fluctuated widely between groups from day to day, the centralized shops gave the wing controller both the authority and the flexibility to get maximum use of all men and tools.[216] Colonel Irvine, who both conceived and controlled this organization for combat maintenance, said that into it went the

> control principles of a good factory, plus the basic principles of production line maintenance plus specialized maintenance as it had been used in various forms in England, the Second Air Force, and CBI, all specially hand-tailored to fit the geography, the equipment, the personnel, and the psychology of the XXI Bomber Command.[217]

Originally there was considerable resistance from the various units to the resultant loss of identity, but strong support from LeMay squelched open opposition. Irvine reported that "every time people started throwing blocks under the wheels . . . Curt really let them have it in his own quiet way."[218]

The measure of success of this centralization of authority and pooling of service units for supply and maintenance is best attested to by the results attained in the face of the 75 per cent increase in bombing operations which began in March. In January, before the new system

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was fully operative, 22.7 per cent or 113 of 497 scheduled aircraft failed to bomb primary targets because of mechanical failures. As the integrated program developed, the abortive sorties for mechanical failures became: in February, 17.4 per cent or 134 of 772 aircraft; March, 9.6 per cent or 235 of 2,441; April, 10.4 per cent or 363 of 3,474; May, 10.9 per cent or 500 of 4,586; June, 9.9 per cent or 550 of 5,565; July, 6.7 per cent or 420 of 6,248; August, 7.5 per cent or 246 of 3,291.[219] Supply efficiency likewise showed a marked increase. The all-out March raids were never hampered by any lack of AAF supplies, although "margins in many instances were precariously slim."[220] While the Guam Air Depot should be credited with a remarkable achievement in supplying the thousands of parts required by the B-29's, the wing supply centers made notable contributions to the following record: in December, 12.7 per cent of an average of 134 assigned aircraft were grounded for parts; in January, 4.6 per cent of 214; in February, 4.5 per cent of 313; March, 4.2 per cent of 388; April, 1.3 per cent of 512; May, 1.0 per cent of 718; June, 0.3 per cent of 790; July, 0.2 per cent of 923; and August, 0.2 per cent of 986.[221]

After completing a tour of the B-29 combat stations in August 1945, Gen. Carl Spaatz radioed Eaker that he was "tremendously impressed with the economy and efficiency which has been achieved here through merging personnel and equipment into common offices and shops supervised through locally improvised organizational structures."[222] Spaatz was also convinced that these organizational changes effected in the theater had contributed materially to the "unparalleled operational accomplishments of the Twentieth Air Force."[223]

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CHAPTER 18

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PRECISION BOMBARDMENT CAMPAIGN

WHAT with the Columbus Day tradition, it may have been a lucky omen that the first B-29 landed at Saipan on 12 October 1944. She was *Joltin' Josie, the Pacific Pioneer*, piloted by Brig. Gen. Haywood S. Hansell, Jr. "Possum" Hansell was already a veteran in the B-29 program. As air member of the JPS he had perhaps done more than any other to plan the VHB assault on Japan. More recently, as Arnold's chief of staff in the Twentieth Air Force, he had directed from Washington the operations of XX Bomber Command in CBI. Given command of XXI Bomber Command on 29 August, he was now slated to control at closer hand the VHB offensive from the Marianas.

The arrival of a commanding general is an impressive event even when he emerges feet first from the belly of a bomber, but the first appearance of a Superfortress is something else again and *Joltin' Josie* shamelessly stole the show. According to *Brief*, the breezy magazine that supplied news and pin-up girls for AAF personnel in the Pacific, "The war just about stopped dead in its tracks the day Joltin' Josie arrived. . . . The first of the B-29's had been inspected by every big gear and ogled from afar by every small fry for 5,000 miles. She was a sensation."[1] Certainly the war effort was halted momentarily at Isley Field. A group historical officer reported that as the huge bomber swept in with its fighter escort, "a great cheer went up, and all work stopped as men shaded their eyes to watch the plane pass over. . . . The thrill that went through all was almost electric in effect."[2]

There was just cause for elation. For Hansell, the safe arrival was a token of the success of the plan he had steered through the JCS, whereby POA forces had bypassed Truk to seize the Marianas as a

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base area for the VLR bombardment of Japan. For the men who greeted him, the coming of the B-29 was the first tangible evidence that their labor in steaming heat and tropical rains was to bear fruit. Yet *Joltin' Josie's* landing was still no more than a token. One airplane, even a Superfortress, did not constitute a striking force, and there was much prosaic work to be done before XXI Bomber Command could drop its first bomb on Tokyo. Isley Field was as yet hardly fit for minimum operation and other VHB fields were months away from completion. The decision to concentrate B-29 bases in the Marianas had seemed to promise the best opportunity for an early and sustained offensive against Japanese industry, but determined enemy opposition on Saipan and competition from Navy construction projects had delayed base development.* The unprecedented decision to operate each VHB wing—with its 12,000 men and 180 aircraft—from a single field would save time,[3] but in mid-October preparations to receive men and planes were sadly in retard.

Though the B-29's of XX Bomber Command had been operating from staging fields at Chengtu in China for four months and though much had been done to perfect the Superfort as a weapon, little had been accomplished toward defeating the enemy. The distances involved had proved frustrating even for the VLR planes of a global air force: the distance from Chengtu to appropriate targets; the distance from Washington to command headquarters at Kharagpur; and above all, the distance to Chengtu from Kharagpur, whence supplies for each mission had to be flown in over the long and dangerous Hump route. By comparison, the Marianas offered many advantages. From Saipan, B-29's could reach all important industrial areas in the home islands, and supplies could be brought in by ship according to a predictable schedule. Yet distance was still formidable even in the Marianas, situated nearly 5,000 miles from San Francisco and more than 1,200 from Tokyo; distance complicated problems inherent in the global command system of the Twentieth Air Force which not even the teleconference could obviate. Headquarters staffs during the move overseas became widely separated: Hansell brought with him only a small advanced echelon, and it took weeks for the whole of XXI Bomber Command Headquarters to complete the trip from Peterson Field, Colorado;[4] when Brig. Gen. Emmett O'Donnell arrived at Saipan on 20 October to open the 73d Bombardment Wing (VH) Head-

* See above, pp. 512–20.

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quarters, he concluded a transfer begun on 18 July.[5] Like headquarters personnel, combat aircraft were strung out between the States and Saipan, and the problem of maintaining a constant flow of B-29's was to continue.

It was planned that ATC ferry the planes to Saipan from Mather Field, California, with stopovers at John Rodgers Airport near Honolulu and at Kwajalein, on a schedule which called for delivery of 5 B-29's a day from 20 October until the 73d's authorized strength of 180 was reached.[6] Planes arrived, however, at the rate of only two or three a day; by 4 November the cumulative shortage at Saipan was seventeen and at Mather Field, thirty. The difficulty lay in the availability of aircraft rather than in the ferrying job—ATC was prepared to deliver seven planes a day, had they been ready for the fly-out.[7] Lt. Gen. Millard F. Harmon, deputy commander of the Twentieth Air Force, kept needling Washington, warning that unless the prescribed schedule were maintained, Hansell could not follow operational plans.[8] In spite of Harmon's importunity, the shortage continued: by 15 November the 73d had only 90 B-29's and by the 22d, 2 days before the first mission over Japan, only 118.[9]

The 73d's personnel had begun to come in earlier. An advanced air echelon of wing headquarters arrived at Saipan on 24 August, the advanced ground echelon on 16 September.[10] The ground echelons of the four VHB groups (497th, 498th, 499th, and 500th) and their constituent squadrons arrived in September, the air echelons in late October and early November.[11] The 73d Wing had been activated on 27 November 1943 and its crews were, by wartime standards, comparatively well trained. But of necessity most instruction had been at the combat-crew level, with little time for unit training. The transition from practice flights in peaceful skies over the prairies of Kansas and Nebraska to combat missions over Japan was at best a hard one for inexperienced crews. They badly needed the intensive unit training program which O'Donnell inaugurated soon after his arrival in Saipan: this included general theater indoctrination, formation flying, rendezvous, communications, and combat missions against targets less vigorously defended than those in the main islands of Japan.[12]

Preliminary Operations

For the first training mission, Hansell chose as an objective bypassed and oft-bombed Truk. The strike, involving a moderately

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long overwater flight and exposure to light Japanese defenses, would help keep the atoll neutralized while the Seventh Air Force's veteran 11th Group, whose B-24's had long been engaged in that task, moved from Kwajalein to Guam. The mission was scheduled for 26 October, but on the 25th it appeared that the B-29's might be called on to help out in the decisive naval engagement then being fought in the Philippine Sea. Hansell canceled the shakedown against Truk and ordered the 73d to stand by, with twenty B-29's on two-hour notice.[13] Although later there would be more than enough requests for tactical help from the B-29's, there was none on the 26th; Harmon, whose job it was to coordinate B-29 and theater operations, told Hansell to get on with the Truk mission.[14] This maiden effort was but a modest affair, compared with XX Bomber Command's first strike of ninety-eight Superforts. On the morning of 28 October XXI Bomber Command, still short of planes, could send only 18 B-29's of the 497th and 498th Groups, each plane loaded with 6,000 pounds of GP bombs and 5,440 gallons of gas.[15] Hansell, a crack pilot who had repeatedly led his heavies in missions over Europe, went along only to have his plane become one of four aborts. As it developed, this was Hansell's last chance to lead a mission, for Brig. Gen. Lauris Norstad, his successor as chief of staff of the Twentieth Air Force, was soon to invoke a regulation forbidding the VHB's commanding general from flying over enemy territory.[16] Fourteen B-29's got over the Dublon submarine pens at Truk to unload from 25,000 feet with indifferent success: the 497th got about half its bombs in the area, the 498th less than 25 per cent. As a training mission, however, it was not bad, and the enemy added a touch of realism by firing a few rounds of flak and sending up one Zeke which remained circumspectly out of range.[17]

Two days later the same groups again sent eighteen bombers against Truk. Bombing results were even less satisfactory than on the 28th. The first formation made a visual run as planned, but the second, finding the target obscured by clouds, missed completely when the radar on the lead plane malfunctioned. Again enemy reaction was limited to a single interceptor which failed to close and an occasional burst of flak.[18] A third strike at Truk was dispatched on 2 November with crews briefed for radar bombing, but the mission served only to emphasize a well-known fact—that the crews still had much to learn. Two of the three squadrons participating mistook thunderheads for

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Ruo Island, designated as the initial point, and the visible bomb bursts were so widely scattered as to defy efforts to draw a bomb plot.[19]

Despite unsatisfactory performances at Truk, O'Donnell decided to send his green crews against Iwo Jima, a more formidable target. Iwo had been hit by carrier planes in a number of strikes in June and July, and since August had been regularly visited by Marianas-based B-24's of Task Force 59. On 2 November, the day of the third go at Truk, the Japanese had struck back in a bombing and strafing attack on Isley Field; although no damage was done to the B-29's parked there, the raiders were thought to have staged through Iwo Jima, some 725 miles to the north, and the fear of other attacks added incentive to O'Donnell's design.*[20] Two airfields on Iwo were named as targets, and operational plans were drafted so as to provide experience in daylight visual bombing and to test night landing facilities at Isley. Though this mission, run on 5 November, was considered successful as a training exercise, as at Truk results were less than impressive—strike photos showed only about a fourth of the visible bomb bursts within 1,000 feet of aiming point.[21] A follow-up attack by seventeen B-29's on the 8th miscarried when one squadron had to jettison its bombs in the ocean, and the other dropped its load through a hole in the undercast. On the first Iwo strike a dozen fighters had come up but had not attacked; on the second, five Zekes and three other planes challenged and one flipped a phosphorus bomb onto a Superfort to score the first —but very minor—battle damage suffered by XXI Bomber Command.[22]

For the sixth and last preliminary training mission, O'Donnell sent crews from the hitherto untried 500th Group in an Armistice Day strike against the Dublon submarine pens at Truk. The eight planes which completed the mission found good weather over the target, where they bombed visually from 25,000 feet with somewhat more accuracy than had been achieved before and without any damage from the feeble opposition they met. But even on this raid the bombing could be rated no better than "fair."[23]

Truk was used by XXI Bomber Command until the end of the war as a practice field for newly arrived combat units, which ran in all some thirty-two practice missions against the atoll. No B-29 was lost: neither the forty guns which made up the AA defense nor the patched-up fighters there could harm the Superfortresses at their con-

* See below, p. 581.

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ventional bombing altitude. There was little left at Truk to destroy, but Japanese officers interrogated after the war credited the B-29's with preventing their forces from rebuilding air installations destroyed in earlier attacks by Navy and AAF planes, and rated B-29 bombing accuracy as "excellent."[24] Certainly this was not true of the first training expeditions, either at Truk or at Iwo, but that was of little moment.[25] What counted was that some crews from all groups except the 499th had been over an enemy target and had faced enemy opposition without suffering casualties or appreciable damage to aircraft. Crews had learned something that could not be taught from the book. More could have been learned in additional milk-run missions, but in mid-November XXI Bomber Command was behind schedule for its bomber offensive against the Japanese homeland. The next time the Superforts left Isley Field they would be Tokyo-bound.

Target Selection

Tokyo was a natural choice for XXI Bomber Command's first strategic mission: except for the Doolittle raid in April 1942 the capital city had experienced no air attack, and a successful strike would have important psychological effects within Japan and among the Allied nations. But the choice was also justified by material considerations based on intensive study of Japanese industry. In earlier chapters it has been shown that the MATTERHORN plan for strategic bombardment by XX Bomber Command's B-29's staging through fields at Chengtu was guided by a report of the Committee of Operations Analysts issued on 11 November 1943.* Deliberately restricted to economic objectives, this report had listed six profitable target systems: merchant shipping, steel production, antifriction bearings industry, urban industrial areas, aircraft plants, and the electronics industry. Although no internal priorities were given, by strong implication the steel industry was preferred above the others, and since that industry alone offered important targets within range of Chengtu, XX Bomber Command had during the early months of its campaign gone out against steel plants in Kyushu and Manchuria.

By autumn of 1944 the strategic situation in the Pacific had changed greatly. The decision of Allied leaders at the Cairo conference to speed up the war against Japan had already produced important results, and as the offensive gained momentum it had appeared

*See above, pp. 26–28.

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that the steel industry, classified as a "long-term" objective, should be passed over for targets offering more immediate results. At Arnold's request the COA had prepared another report in two parts, based on the alternate assumptions that the war could be won by aerial and naval blockade alone or by those means plus an invasion of the home islands. This report was submitted on 10 October, two days before Hansell landed at Saipan.[26] Its recommendations for XX Bomber Command and the resulting changes in target selection have been described in a previous chapter;* the main concern of the COA, however, was with operations of B-29's based in the Marianas.

Under the first assumption, the air-sea war, the COA recommended attacks against Japanese shipping (to include a comprehensive VLR mining campaign), the aircraft industry, and Japanese urban industrial areas. Mining was to be a continuing program, but after completion of planned attacks against aircraft factories and urban areas, the strategic target program was to be reviewed in search of more profitable objectives—the food supply, for instance, might be vulnerable to air attack. Recommendations under the second assumption were similar, though the order of items and the emphasis were changed: "an attack on the aircraft industry and on urban industrial areas and an intensification of the attack on shipping by all available means, including mining by VLR aircraft where operationally feasible." Although first priority was given to the aircraft industry, the COA believed that, if possible, mining operations should be conducted concurrently. For the area attacks, six cities were named—Tokyo, Yokohama, Kawasaki, Nagoya, Kobe, and Osaka—but the attacks were to be delivered only when they could be done in force and within a short time.[27] Because the JCS believed that an invasion of Japan would be necessary, it was the latter set of recommendations which was to guide the Twentieth Air Force in its choice of targets; the lessons of the Combined Bomber Offensive in Europe had had a sobering effect, and no person of authority in the AAF urged the probability of a victory by air power alone. There was no disagreement with the COA opinion that shipping losses had so threatened Japan's industrial balance that it would be profitable to neglect such long-term objectives as steel in order to cripple those industries geared directly to the military machine. On the score of military importance and of vulnerability, moreover, no industry seemed so attractive an objective as that en-

* See above, pp. 133–35.

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gaged in production of aircraft. This target system, merely listed as one of six in the report of 11 November 1943, was now given first priority.[28]

The Japanese aircraft industry had got its start just after World War I, using for the most part patents obtained from American, British, and German firms. Total output in 1930 was 445 planes and in 1936 was 1,181. Thereafter the China "incident" and plans for further aggression brought a marked increase in production: in 1941, 5,088 military planes were built. After Pearl Harbor this expansion was stepped up, with production figures mounting to 8,861 in 1942, 16,693 in 1943, and 28,180 in 1944. As in the United States, the mere recital of totals does not tell the whole story of expansion, for planes increased in weight and improved in performance, and the ratio of combat types to trainers was sharply increased.[29] From the beginning a few big names dominated the industry: four companies—Nakajima, Mitsubishi, Kawasaki, and Tachikawa—turned out more than two-thirds of all the aircraft built during the war years, and three-fourths of all combat types were produced by the first three of these.[30] Concentrated in and around the cities of Tokyo, Nagoya, and Osaka, the aircraft industry was a target system highly susceptible to attack. The Joint Target Group (JTG) at Washington approved in general the recommendations of the COA and emphatically indorsed the priority given the aircraft industry and the delay in urban area attacks (save for one test incendiary mission against a small city district). The JTG believed, however, that the VLR mining campaign should also be delayed, except in tactical support of other operations, until "Japanese airpower is destroyed, or until it is calculated that a blockade of Japan can be imposed, which will more decisively affect the enemy war capability than attacks on other target systems."[31] With this modification in timing, the COA report was to guide the initial campaign of XXI Bomber Command.

Hansell and O'Donnell had called the shots on the training missions; under the peculiar command system of the Twentieth Air Force, the JCS, through Arnold and Norstad, now took over. The first target directive, sent to Hansell on 11 November,[32] set the primary mission of the Twentieth Air Force as the destruction of Japanese aircraft engine and assembly plants and major overhaul and repair facilities: XX Bomber Command was to continue the campaign it began in strikes against Okayama and Omura; XXI Bomber Command was to launch

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its attacks against the homeland in November. The latter's primary targets, to be attacked by precision methods, were listed in the following order of priority:

1. *Principal Engine Manufacturers:*
   Mitsubishi Jukogyo, Nagoya Hatsudoki
   Nakajima Hikoki, Musashino Seisakusho
   Kawasaki Kokuki, Akashi
   Nakajima Hikoki, Tama Seisakusho
2. *Principal Aircraft Component and Assembly Plants:*
   Nakajima Hikoki, Ota Seisakusho, Takasaki area
   Kawasaki Kokuki, Kagamigahara, Nagoya area
   Nakajima Hikoki, Koizumi Seisakusho, Takasaki area
   Mitsubishi Jukogyo Kokuki, Nagoya area
   Aichi Tokei Denki, Eitoku, Nagoya area

Secondary and last resort targets, all suitable for radar bombing, were listed in two groups: 1) port areas (Osaka, Nagoya, Tokyo, Kawasaki, Yokohama, Shimonoseki, Kure, Hiroshima, Kobe, Nagasaki, Sasebo, and Yokosuka); and 2) urban areas (Hiroshima, Kure, Niigata, Yawata, Tobata, Wakamatsu, Kurasaki, Kokura, Fukuoka, Nagasaki, Omuta, Moji, Kurume, and Nobeoka).

The secondary mission of the Twentieth Air Force was support of planned Pacific operations, with targets to be selected by the Washington headquarters in coordination with other commands concerned. XXI Bomber Command was to perform all photography necessary to assigned operations and such special photo missions as might be directed. Finally, Norstad indicated there would probably be test incendiary attacks against some of the urban and port areas listed as alternate targets.[33] In view of postwar criticisms of target selection in ETO where assembly plants were given preference over aeroengine factories,* it is important to notice the reversal of that policy in this listing of priorities, dictated by the apparent concentration of production in a few factories.

SAN ANTONIO I

To secure the maximum effect from the opening blow of the VHB campaign, Tokyo had been chosen. According to Norstad's teleconference of 11 November, transmitting the JCS directive, the specific target was Nakajima's Musashino plant, like all of the Twentieth's

* See Vol. III, 793–94.

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targets described in a special target information sheet. It was located at the edge of a crowded suburb in the northwest part of Tokyo, some ten miles from the Emperor's Palace.[34] In assigning this plant a priority second only to Mitsubishi at Nagoya, the JCS had assumed that Nakajima's plant at nearby Tama (carrying fourth priority) was a separate establishment; later the two were considered as one target, a judgment confirmed when postwar investigation revealed that the two factories, originally independent, had been merged in October 1943. Estimates that Musashino-Tama (or Musashi, to use the correct name for the merged plants) produced 30 to 40 per cent of all Japanese combat aircraft engines were reasonably close to the true figure of 27 per cent. Nakajima had manufactured a number of air-cooled models purchased from the Wright Aeronautical Company in 1937; by late 1944 the plant was concentrating on army and navy versions of the 1,130-horsepower Ha-35 and the 2,000-horsepower Ha-45. Six major assembly plants were dependent completely or in part on Musashi's output; its destruction, then, was expected to have early and significant results on delivery of military planes.[35]

Lamenting the paucity of target intelligence, the COA had recommended in its report of 10 October an early photographic coverage of Japan's industrial centers by VLR planes.[36] Although the photo-reconnaissance B-29's of XX Bomber Command were already engaged in that task, the most important areas lay beyond their range, and the task fell to Hansell's 3d Photo Reconnaissance Squadron, 2 of whose F-13A's arrived at Saipan on 30 October after a 33-hour, 2-stop flight from Mather Field. At 0550 on 1 November a crew headed by Capt. Ralph D. Steakley took off for Japan. His F-13, first U.S. plane over Tokyo since April 1942, droned above the city at 32,000 feet in clear weather, its cameras recording long-hidden industrial secrets. After nearly fourteen hours in the air, the plane returned unscratched. The crew received well-merited decorations, and the command got needed negatives from which the squadron's understaffed photo-lab unit hurriedly turned out 7,000 prints.[37] Reconnaissance missions continued as more F-13's trickled in; one was lost in a mission to Nagoya on 21 November, but there were nine on hand at the end of the month. Before the first strike at Tokyo, on 24 November, the 3d P/R Squadron flew seventeen single-plane missions over the home islands, of which eight were for weather reconnaissance. When enemy opposition permitted, an F-13 could stay over the target for about an

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hour on missions with a 1,500-mile radius, and neither fighters nor flak were effective: of 100 fighters airborne on 7 November, for instance, only 2 got within 1,000 yards of the high- and fast-flying F-13's; the heavy flak encountered on every mission did no damage.[38] Weather was a more formidable opponent, however, and a third of all photo missions in November and December were thwarted by undercast and another third partially spoiled. Yet by 11 November Hansell felt that he had adequate coverage of the most important aircraft plants in the Tokyo area, as well as naval and harbor installations at Tokyo, Yokohama, Yokosuka, and Kawasaki.[39]

Meanwhile, on 30 October Hansell had submitted to Arnold his operational plan for the first strike at Tokyo, coded SAN ANTONIO I. This called for daylight, visual bombing from 30,000 feet by 10 to 12 squadrons of 9 to 11 planes, each carrying 5,000 pounds of bombs (30 per cent M76 incendiaries and 70 per cent 500-pound GP's) and 8,070 gallons of gas.[40] Enemy opposition could not be accurately forecast. Washington had estimated first-line fighter strength in Japan at 1,114 on 12 October, at 608 on 2 November; the 73d's field orders indicated that 400 to 500 fighters in the Tokyo-Nagoya area could be sent up against the B-29's.[41] These figures were all too high; the Japanese order of battle for the home islands in November included only 375 fighters.* Preliminary analysis of photos had revealed at least 150 heavy AA guns between Tokyo and Funabashi, so that intense and accurate fire was predicted for the Tokyo and Tokyo Bay areas, on the Chiba peninsula, and along Sagami Bay.[42] Information concerning the enemy's radar was vague. After some debate between Hansell and Harmon over countermeasures, Norstad decided that XXI Bomber Command should send out pre-strike ferret missions as well as a D-day diversion to Nagoya by "window"-dropping F-13's; jamming by RCM transmitters on the B-29's was to be deferred until radar operators were better trained.[43] Air-sea rescue precautions were elaborate: for SAN ANTONIO I, 5 lifeguard submarines, assigned by the Commander, Submarines, Pacific (ComSubPac) and under operational control of Task Group 17.7, were stationed between Honshu and Iwo Jima; one destroyer was to patrol south of Iwo and another was to be dispatched for duty in the area 100 to 150 miles north of Saipan; 1 PBM searchplane was to be on station just south of Iwo, while 3 PBM's and 6 PB2Y's were held on alert at Saipan.[44]

* See above, p. 172.

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Selection of a D-day involved much discussion. Both Washington and Hansell wanted an early date, but the latter was hesitant to send fewer than 100 B-29's over Tokyo, and the slow deliveries from Mather Field put a brake on his plans.[45] On 16 October, after talking with Hansell at Saipan, Harmon told Arnold that SAN ANTONIO could be run on or about 10 November.[46] Shortly thereafter, Harmon, Hansell, and a representative of Nimitz' headquarters worked up a plan to coordinate the B-29 mission with a carrier strike (HOTFOOT).[47] Beginning on 12 November, the Navy planes were to hit the Tokyo area, and by the 17th when the B-29's would arrive, Japanese fighter defense should have been badly hurt. Hansell liked this idea and timing, which would help him get his minimum of 100 B-29's for SAN ANTONIO; though Norstad was less enthusiastic, he concurred on 28 October.[48] Four days later Arnold qualified this approval, informing Harmon that the double strike was on only if a firm date could be set for HOTFOOT; otherwise XXI Bomber Command was to go on alone when enough B-29's were on hand.[49] Nimitz, his carriers heavily committed in the Philippines, was forced to put off the strike and could not underwrite any early date.[50] Hansell still wanted more time and the carrier help, and Harmon was willing to maintain daily contact with CINCPOA in hopes of getting a D-day for HOTFOOT which could coordinate with the 20 November deadline for the B-29 mission.[51] On the 12th Nimitz indefinitely postponed HOTFOOT, and SAN ANTONIO was set up as an independent strike for the 17th.[52]

Long before dawn on that day Isley Field was alive with preparations. The plan was a widely spread secret on Saipan, and vehicles bearing personnel of all ranks poured into the great base. Twenty-four war correspondents, representing every important news outlet in the United States, were on hand to give the command its first spate of publicity. Movie cameramen got set to catch the Superforts as they rolled down the runway and became airborne. "Rosey" O'Donnell climbed into his B-29 under a barrage of photo-flash bulbs. Everything was set but the weather. That element, which was to prove the worst hindrance to the B-29 campaign against Japan, was giving an ominous preview of things to come. In the long run, target weather was to cause the most trouble, but on the morning of 17 November it was base weather that held up the show. Most unusually and perversely, the prevailing easterly wind had veered around into the

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southwest, so that the customary take-off run would have to be reversed. At Isley this involved an uphill pull, hazardous at any time for combat-loaded B-29's, and suicidal in the steady rain which was falling as H-hour approached. A wing operations jeep notified airplane commanders that take-off would be delayed one hour, but after sixty minutes the rain showed no signs of abating. The mission was postponed for twenty-four hours.[53]

On the morning of the 18th weather forced another day's delay. This schedule-and-scratch routine became SOP through a week of frustration during which nerves were frayed to the breaking point. In Washington, Arnold and his staff grew impatient; so did the men who had worked through Saipan's summer heat and autumn rains to build the base. The combat crews, their enthusiasm dulled by repeated postponements, griped that the B-29 was the best plane that never left the ground. For a long week the clouds hung low over Isley. Then the wind veered again, and the 24th dawned clear. This was it.[54]

At 0615 the first plane rolled down the strip: it was *Dauntless Dotty*, with O'Donnell at the wheel and Maj. Robert K. Morgan, erstwhile pilot of the famed *Memphis Belle*, in the co-pilot's seat. The great silver plane used every inch of the black-topped runway and a short stretch of the coral extension before pulling up; then, skimming the water beyond, it passed out of sight.[55] The long delay had built up Hansell's force, and *Dauntless Dotty* was followed by 110 other B-29's, carrying in all 277.5 tons of bombs.[56] Hansell had originally planned two routes outbound, straddling the Bonins and so plotted as to get the four combat groups over the target simultaneously in a converging attack from east and west.[57] With typhoon conditions between Saipan and Iwo and with weather planes reporting the storm moving northeastward, Hansell instead sent all his planes up the western track, briefed to attack along a west-to-east axis.[58] To fit these changed tactics, Hansell switched the diversionary mission from Nagoya to the Tokyo area. The F-13's were to enter the Japanese radar screen from the southeast as the first B-29's went in from the southwest; after dispensing "rope" the F-13's were to photograph target damage by the early groups, and a lone F-13 was to follow the last combat group to get final photo coverage.[59]

En route to Tokyo seventeen B-29's aborted. Six Superforts were unable to bomb because of mechanical failures, and the weather over Tokyo made bombing difficult for the others. Formations flying at

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altitudes of from 27,000 to 33,000 feet were swept into a 120-knot wind which gave the bombers a ground speed of about 445 miles per hour;[60] below, an undercast almost completely obscured the target. Only twenty-four planes bombed the Musashino plant; sixty-four unloaded on dock and urban areas. Thirty-five of the aircraft that bombed had to do so by radar. The Japanese fighter defense was less fierce than had been feared and much less effective than that which had been met by AAF formations over Germany. Intelligence officers, consolidating crew reports, figured that about 125 Jap fighters had been up—a mixture of Tojos, Zekes, Tonys, Nicks, Irvings, and some unidentified planes—of which the B-29 gunners claimed 7 destroyed, 18 probables, and 9 damaged. As usual in Japanese interceptions, there seemed to be no coordinated plan of attack, and pilots varied in skill, aggressiveness, and tactics used. The one U.S. combat loss occurred when an enemy pilot drove his damaged Tony into the tail of a B-29 in what looked like a deliberate ramming; with elevator and right horizontal stabilizer shorn off, the Superfort crashed into the sea twenty miles off the Honshu coast with the loss of all aboard. Flak was meager to moderate, and generally inaccurate.

The planes came back in formation, as planned, to a point opposite Iwo Jima and thence on home individually. Air-sea rescue precautions paid off when the whole crew of one B-29 was saved after running out of fuel and ditching. The others came straggling in, landing between 1926 and 2259 hours. Because of congestion at Isley, two groups went on to Guam, returning to Saipan next day. The total cost was not great by standards used for unescorted bomber missions in the ETO: two B-29's destroyed, eight damaged by enemy action and three by accidental hits from B-29 guns; one man killed, eleven missing, and four injured. But bombing results of the mission were not encouraging. The F-13's, like the bombers, were hindered by clouds and their strike photos showed only sixteen bomb bursts in the target area.[61] Actually, the bombing was somewhat better than this incomplete coverage indicated, but still not good. A bomb plot prepared by the Musashi management and known to Americans only after the war showed 48 bombs (including 3 duds) in the factory area; 1 per cent of the building area and 2.4 per cent of the machinery were damaged, and casualties included 57 killed and 75 injured.[62] The intangible results were more important. The XXI Bomber Command had struck the toughest target area in Japan under bad weather condi-

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tions without excessive losses.[63] And the appearance over Tokyo of the B-29's brought home to the Japanese people, in more compelling fashion than the earlier strikes at outlying cities by XX Bomber Command, the impotence of the Japanese air forces to cope with the strategic bombers. This was the beginning of the disillusionment that made the government's propaganda progressively less effective.[64]

High-Altitude Precision Bombing

SAN ANTONIO I set the pattern for the next three months of operations by XXI Bomber Command. There were deviations—more strikes at Iwo Jima's airfields, a night area attack on Tokyo, experimental incendiary raids on urban areas at Tokyo, Nagoya, and Kobe —but until 9 March the command was concerned primarily with daylight, high-altitude, precision attacks delivered against aircraft factories in Japan according to orthodox AAF doctrines.

Because of the slight damage wrought on 24 November, Hansell decided to send his planes back to Musashino in a second major effort (SAN ANTONIO II), the operational plan substantially the same as on the first strike, except for a change in the method of withdrawal. To exploit any weakness in the enemy's defenses that had resulted from the first mission, he set an early D-day, 27 November.[65] The 73d Wing had by now 119 Superforts but only 87 were scheduled for the mission. Actually, eighty-one were airborne on the 27th; nineteen of these aborted and the others found the target completely hidden by 10/10 cloud. As briefed, they dropped by radar on the secondary targets, dock and urban areas at Tokyo, and on Hamamatsu, Shizuoka, Numazu, and Osaka. One B-29 was lost with its entire crew, when it ditched on the return trip.[66] Although the F-13's were unable to take strike photos, it was later realized that Musashino was intact in spite of the 192 sorties sent against it, and there was little hope that any important damage had been done elsewhere. The two missions, though not destructive, provoked angry reaction from the Japanese. Staging down from Iwo Jima, they heckled Isley Field in small but effective raids: in two attacks they destroyed four B-29's, seriously damaged six, and inflicted lesser damage to twenty-two others. Hansell was worried enough to disperse his force by sending some of his B-29's from crowded Isley to safer Guam, and to plan joint air-sea strikes at Iwo in which the Superforts might help neutralize the staging fields.[67]

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Meanwhile, Hansell informed Washington of his intentions: maximum strikes against a top-priority target when weather would permit visual bombing and he had sixty planes ready to go; raids against secondary targets with thirty or more planes when weather prevented precision bombing; and nightly weather-strike missions.[68] He wanted to improve on SAN ANTONIO II with a big daylight show within the next two days, but the weather forecasts were pessimistic and there were not enough B-29's in commission to meet his minimum standard. To keep up the pressure on the enemy—and in part to relieve congestion at Isley, which on the record was a more dangerous location for a B-29 than the sky over Honshu—he ran a night radar mission of some thirty planes on 29 November. The target was the dock and industrial areas in Tokyo and again the results were negligible.[69]

For 3 December the command scheduled a maximum daylight mission against the Nakajima Aircraft Plant at Ota, forty miles northwest of Tokyo.[70] By D minus 1 weather reports were forbidding: at bombing altitudes over Ota, winds were reaching velocities of 180 miles per hour or more. At 0130 on the 3d it was decided that the only hope for the day was to go back to Musashino where visible bombing might be possible.[71] Crews had already been briefed twice for the target; the 73d Wing hurriedly cut field orders and by 0945 eighty-six bombers were heading for Tokyo. Seventy-six got over the city to find clear weather but high winds; 59 planes bombed visually from a mean altitude of 28,700 feet with poor results.[72] Musashi's records indicate that twenty-six bombs fell in the plant area with some small damage to buildings and equipment and almost none to machinery; Japanese casualties were moderately high. Strike photos, the command's only source of information, seemed to show even less damage, and for these slight results the command had paid dearly, with six B-29's lost and six damaged.[73]

It was ten days before XXI Bomber Command went back to Japan in force, though the B-29's did participate in a joint Army-Navy attack against Iwo Jima on 8 December.* On 6 December Arnold's headquarters issued a new Air Estimate and Plans for Twentieth Air Force Operations,[74] but one which differed little from the similar paper drawn up in November either in concept or in target priorities. MacArthur's campaign in the Philippines was behind schedule, and

* See below, p. 584.

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the Twentieth was obligated to support Pacific operations—specifically, Third Fleet operations in advance of the Mindoro invasion set for 15 December.[75] According to accepted AAF doctrine, this could best be done by attacking an important industrial objective. The choice for primary visual target was the Mitsubishi Aircraft Engine Works at Nagoya, and the same company's aircraft works was named as radar target (rather than secondary, as Norstad had suggested); strays, it was hoped, would spill into crowded Nagoya, Japan's second city and an industrial center of great importance.[76] The engine works, still in top priority for XXI Bomber Command,[77] lay in the northeast section of Nagoya, about two and a half miles from Nagoya Castle. The plant was considered by the JTG as a single target,[78] though it actually consisted of three separate but closely related units of the vast complex comprising the Mitsubishi Heavy Industries, Ltd.: 1) the No. 2 Engine Works, responsible for research, design, and manufacture of prototype engines; 2) the No. 4 Engine Works, which between 1939 and 1945 manufactured 44,004 engines, the most important model being the Ha-102, a 1,000-horsepower motor used on the Nick and Dinah 2; and 3) the No. 10 Engine Works, which furnished castings and forgings for all Mitsubishi engine plants.[79]

On the 13th, the 73d Wing was able to get ninety bombers up, most of them carrying ten 500-pound GP's but one squadron from each group loaded with incendiary clusters. As on previous missions, a number of planes failed to reach the primary target: sixteen B-29's aborted and three bombed targets of opportunity. Japanese resistance was lively and, in all, four B-29's were lost, thirty-one damaged.[80] The bombing, if of less than pickle-barrel precision, showed improvement. Strike photos indicated that 16 per cent of the bombs dropped had fallen within 1,000 feet of the aiming point and that 17.8 per cent of the roofed area had been destroyed.[81] Although this in itself was encouraging, had intelligence officers been able to read from their photos the whole story, there would have been even more optimism on Saipan. At the No. 4 Engine Works an assembly shop and 7 auxiliary buildings were destroyed, and an assembly shop and 11 buildings were damaged; at the No. 2 Engine Works a prototype engine-manufacturing shop and 2 other shops were damaged; and personnel losses ran to 246 killed and 105 injured. For the first time XXI Bomber Command had made an appreciable dent in the aircraft industry. Plant officials calculated that the attack reduced productive

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capacity from 1,600 to 1,200 engines per month; after 13 December parts were no longer machined at No. 4, and engine production was limited to assembling parts on hand and those received from other plants. Mitsubishi officials had been considering the advisability of dispersing the Nagoya facilities ever since the U.S. conquest of Saipan. After the strike of 13 December the transfer of equipment to underground sites began, but even at the end of the war the movement had not progressed far enough to allow production in the new plants.[82]

Nagoya had only a brief respite. On 18 December Hansell dispatched eighty-nine bombers against the Mitsubishi Aircraft Works, the giant assembly plant which used most of the engines produced in the No. 4 Engine Works. Located on reclaimed land at the northeast corner of Nagoya harbor,[83] it was, like the engine works, composed of three integrated plants: 1) the No. 1 Airframe Works for research and experimental engineering; 2) the No. 3 Airframe Works, which built navy planes—Zeke and Jack fighters and Betty bombers; and 3) the No. 5 Airframe Works, which manufactured bombers and reconnaissance and transport planes for the army. Large, compact, and conspicuous, this complex offered an excellent visual target, and the proximity of the harbor's shore line made it suitable for radar strikes as well.[84] All of this was fortunate—or should have been. On this 18 December attack many planes, as usual, failed to follow the flight plan so that only sixty-three planes bombed the primary target. Cloud cover was heavy and forty-four of these dropped by radar, to add considerably to the damage caused by an earthquake on 7 December. Though few bombs were plotted in the area, 17.8 per cent of the roofed area appeared to have been destroyed.[85] The No. 3 Works suffered extensive damage to the sheet-metal, heat-treatment, fuselage-assembly, and final-assembly shops, and at No. 5, approximately 50 per cent of the total assembly area was damaged. Casualties, in dead and injured, amounted to 464. In spite of the damage, however, production loss amounted to only about ten days' work.[86]

Again on 22 December XXI Bomber Command went back to Nagoya in a repeat attack on Mitsubishi's engine works. This time the mission was planned as a daylight incendiary mission, with each B-29 carrying 2.75 tons of M76's and no high explosives.[87] The change in tactics resulted from recent correspondence between Washington and Saipan which seems significant in the light of later changes in the command setup. Convinced from an early date that Japanese cities

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were highly inflammable,[88] Arnold's headquarters had suggested in the target directive of 11 November that test incendiary raids be conducted before running the mass attacks on six selected cities.* A small raid against Tokyo on the night of 29/30 November had been unsuccessful. On other missions some incendiaries had been used, but Washington seemed to think too much reliance was being placed on HE bombs.[89] On 18 December, just after LeMay's XX Bomber Command had burned the heart out of Hankow's military storage area with fire bombs.† Norstad requested a full-scale incendiary attack on Nagoya as soon as 100 B-29's were ready to go—this as an "urgent requirement" for planning purposes.[90] Hansell protested strongly: he had "with great difficulty implanted the principle that our mission is the destruction of primary targets by sustained and determined attacks using precision bombing methods both visual and radar"; now as this doctrine was "beginning to get results" on the aircraft industry, pressure to divert his force to area bombing threatened to undermine the progress made. Hansell would, however, consider the message as an order modifying his original directive.[91] Norstad replied immediately in a conciliatory message: the aircraft industry continued to carry an "overriding priority" and the test fire raid, he reiterated, was simply a "special requirement resulting from the necessity of future planning."[92] Mollified, Hansell promised to run the desired mission as soon as possible after completing missions already scheduled.[93]

This reply went out on 21 December. The Nagoya mission on the next day, though using only incendiaries, was not in fulfillment of Norstad's request; it involved only 78 bombers dispatched instead of 100 and it was planned as a daylight precision attack. The weather turned bad, however, and before the last formations were over Nagoya the target was covered by 10/10 cloud. Only forty-eight planes bombed the Mitsubishi plant and they had to drop by radar; strike photos were few and revealed little.[94] Actually there was not much damage to reveal: 252 fire bombs fell in the area of the No. 4 Works, damaging a few buildings but hurting no machine tools and causing no loss to production.[95]

The last mission Hansell had on his December docket was a return trip to the first homeland target, Nakajima-Musashino near Tokyo, on 27 December. By any reasonable standards the attack was a failure.

* See above, p. 554.
† See above, pp. 142–44.

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Only 54 per cent of the B-29's participating—thirty-nine out of seventy-two—bombed Musashino, and the twenty-six bombs in the area plotted by Japanese observers did little damage other than setting fire to a hospital.[96] This unhappy accident may have given point to a favorite Japanese propaganda line—that the American devils were chiefly interested in destroying hospitals, schools, and private homes. And the fact that most of the small damage done was by incendiaries rather than by the high explosives dropped was not a decisive argument in the current debate over tactics.

Norstad's test mission was run on 3 January, when ninety-seven B-29's got off for Nagoya. Each plane carried a mixed load of bombs —14 x 350-pound M18 IB clusters fuzed to open at 8,000 feet and one 420-pound fragmentation cluster fuzed to open 1,000 feet below releasing altitude. What with aborts and planes straying from course, only fifty-seven bombed the urban area designated as primary target, most of them releasing visually though cloud cover was rated as 6/10. Some fires were started but there was no holocaust. Smoke rising to 20,000 feet combined with cloud to make observation of results impossible for the attackers.[97] As a test, then, the mission was inconclusive. To the citizens of Nagoya, who were better informed than intelligence officers of XXI Bomber Command, the damage seemed slight. For the Japanese, it was unfortunate that they formed, on the basis of this ineffective raid, grossly exaggerated ideas of the efficiency of their fire-prevention system.[98]

Having satisfied Norstad's requirement, the command returned to its program of precision bombing against aircraft factories. Performance for the most part was of a piece with what had gone before. On 9 January 1945 seventy-two B-29's were sent against Musashino near Tokyo. High winds broke up the formations so that only eighteen planes were able to bomb the target; twenty-four bombs, widely scattered in the plant area, destroyed one warehouse and damaged two others—a slight return for the effort expended and the six B-29's lost.[99] At the Mitsubishi Aircraft Works at Nagoya on the 14th, precision bombing was again less than precise. Seventy-three B-29's were airborne and forty bombed, getting four GP's—one ton—into the No. 5 Works area and damaging three buildings.[100]

An attack on 19 January was a welcome interlude in this litany of failure. The target was virgin, a plant of the Kawasaki Aircraft Industries Company located two miles northwest of Akashi, a village

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on the Inland Sea some twelve miles west of Kobe. The Akashi works housed Kawasaki's general headquarters and one of the company's two large production units, which built the twin-engine fighters Nick and Randy and engines for Tony, Oscar, and Frank fighters. Smaller than Nakajima and Mitsubishi, Kawasaki in 1944 delivered 17 per cent of Japan's combat airframes and 12 per cent of its combat engines.[101]

Against Akashi, Hansell sent seventy-seven B-29's, plus three others in a diversionary strike. With good weather, 62 bulled it through to the Kawasaki factory, dumped 155 tons of GP's, and then returned with no losses. Interpreting strike photos, intelligence officers estimated that 38 per cent of the roofed area showed major damage.[102] This was an understatement. Every important building in both the engine and airframe branches had been hit and production was cut by 90 per cent. Indeed, the Kawasaki Company liquidated the combined plant and dispersed the machine tools, which had suffered only slightly, to other sites. The Akashi shops were given temporary repairs at the cost of 226 tons of critical materials and over 9,000,000 yen, but the installation was used thereafter only for limited assembly jobs.[103] It is a pity that the full results of this mission could not have been known to Hansell. His first completely successful B-29 attack, Akashi seemed to epitomize the doctrines of precision bombardment he had championed—and it was his last strike of the war. On the next day he was succeeded as head of XXI Bomber Command by Maj. Gen. Curtis E. LeMay, who was transferred from his similar post with the XX in the CBI.

The relief of a commanding general during a lagging campaign is seldom a pleasant affair for the parties concerned; often there are factors involved too delicate to commit to writing even in a top-secret "eyes-only" message. In this instance there were personal relations that must have made the decision a hard one for Arnold: Hansell had been for a while his top planner and something of a protégé, and Arnold was not without a streak of sentiment for his "boys." Nonetheless, he seems to have made up his mind during December to replace Hansell. On the 7th Norstad wrote Hansell, apropos of the delays in mounting SAN ANTONIO I:

> I knew you would worry about the Chief's feelings at that time since you know him well enough to realize he would be very much keyed up until the first show was over. He was impatient, but his impatience was directed against

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the circumstances and not against you. You were not "on the pan" at any time. I think I can best illustrate his attitude by telling you his reaction to the fourth and fifth postponement. After he had indicated that he was disturbed, I made a statement to the effect that I didn't think it a good thing to put the heat on you under the circumstances. He replied, "Who said anything about putting the heat on Possum?" in a rather irritated manner.[104]

But by the turn of the year the heat was on. Arnold sent Norstad to the Marianas to break the news and ordered LeMay to go there for a conference.[105] Norstad arrived at Guam on 6 January and told Hansell of his impending relief;[106] LeMay flew in from Chengtu next day.[107] Although it is likely that no formal record was kept of the conference, one might guess that it involved a certain amount of embarrassment for all.[108] Three young generals—Hansell, the eldest, was forty-one—were arranging for a turnover in what was the most coveted operational command job in the AAF. Norstad was Hansell's friend, had worked with him in the same office, and had succeeded him as chief of staff in the Twentieth; LeMay had served as a group commander in Hansell's heavy bombardment wing in the United Kingdom in 1943. But whatever personal feelings may have been involved, the business was soon settled. LeMay flew back to Kharagpur, taking with him Brig. Gen. Roger M. Ramey, Hansell's chief of staff, to head up XX Bomber Command.[109] Returning to Guam with a small group of staff officers, LeMay assumed command of XXI Bomber Command on 20 January.[110]

Before leaving for the States—where by his own request he was to take over a minor job in the B-29 training program—Hansell rendered an account of his stewardship in a ten-page letter to Arnold.[111] Earlier Hansell had admitted dissatisfaction with the performance of his command,[112] and he was still far from content though he cited statistics to show that in comparison with the 58th Wing in the CBI the record of the 73d "doesn't look too bad." He listed four major problems that had confronted him: 1) converting the 73d Wing from a preference for radar night bombing to a belief in precision bombing; 2) improving bombing accuracy, which was "deplorable"; 3) reducing the abortive rate, which had reached 21 per cent of sorties; 4) reducing the number of aircraft ditching and improving air-sea rescue. In each case he thought that remedial actions were already taking effect. His main fault, Hansell felt, had been in driving his crews too hard; in the absence of depot facilities and adequate maintenance this had resulted in excessive aborts and losses at sea.

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Hansell's letter, actually an answer to criticisms explicit or implied, sheds some light on the reasons for his relief. He was not responsible for the unexpectedly bad weather, the slow build-up of forces, or the retarded development of installations, and another man might have done no better under the circumstances. But XXI Bomber Command had not got the expected results and Arnold was not a patient man. Perhaps in the last analysis Hansell's chief fault was in adhering too strictly to the "book"—to doctrines of precision bombardment which he had helped formulate—in the face of a growing interest in area incendiary bombing evinced by Arnold's headquarters. Whatever the cause, out went Hansell, the brilliant planner, and in came LeMay, widely recognized as a driving operator. LeMay had gone to Kharagpur as a trouble shooter when XX Bomber Command's operations had lagged; now, with that command withdrawing from its Chengtu base, his job in CBI was washed up and he was coming to XXI Bomber Command in a similar role. He was to find operational conditions in the Marianas, in spite of obvious difficulties, immeasurably better than in CBI, and he lost little time in exploiting the potentials of his new command.

LeMay's first two missions, however, showed little variation from the familiar pattern. On the 23 January mission against the Mitsubishi engine plant at Nagoya, 9/10 cloud so obscured the city that only 28 out of 73 planes bombed, getting 4 GP's and 144 incendiaries in the target area and causing some damage to an assembly shop, a prototype shop, and an office building.[113] Four days later a planned attack on Musashino was completely spoiled by clouds and high winds over Tokyo.[114] On 28 January LeMay suggested turning from Tokyo and Nagoya to targets less hotly defended; specifically, he recommended the Mitsubishi Aircraft Works at Tamashima.[115] Norstad replied that LeMay had "fullest latitude" in mixing his blows so as to disperse enemy defenders, even to the extent of hitting lower-priority targets when "tactical consideration" warranted. Tamashima was so unimportant, however, that it was dubious that the Japanese would make any significant changes in fighter deployment for its defense. Norstad thought an incendiary attack on Kobe would be more fruitful: it would furnish information lacking after the inconclusive test raid on Nagoya and if successful might cause the enemy to thin out his fighter defenses.[116] Accordingly, LeMay scheduled his first February mission as an incendiary attack on the port and

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built-up areas of Kobe, which, with a prewar population of 1,001,200, was Japan's sixth largest city and most important port. Its yards housed the Empire's largest concentration of shipbuilding and marine engine capacity; it was an important rail junction and its key industrial plants—steel, railway equipment, machinery, rubber, and ordnance—were closely integrated into the city's transportation system. Though of comparatively recent growth and hence more modern in construction than many of Japan's cities, Kobe's congested business and factory districts and adjacent residential areas were considered highly vulnerable to incendiaries. For the test attack, the target would be the core of the city where the population averaged about 100,000 per square mile.[117]

For the first time XXI Bomber Command was to send planes from two wings against the home islands. Early planning had called for the deployment of three wings in the Marianas; later, after long debate,* the total was set at five, the two extra wings being diverted from contemplated deployment in the Philippines.[118] The lag between plans and execution, however, was considerable. The 73d Wing was still short of authorized strength in aircraft—its daily average for January was 137 B-29's on hand, and at the end of the month there were only 157 out of the promised 180.[119] Aircraft and crews of the 313th Bombardment Wing (VH), commanded by Brig. Gen. John H. Davies, began to arrive at North Field, Tinian, on 27 December; two groups, the 504th and 505th, were on hand by 1 January, but the 6th and 7th were not at station until 28 February. At the end of January the 313th had 122 B-29's.[120] Hansell had found the 504th and 505th so deficient in unit training that he started them off in a training program, designed to last four or five weeks and including a thirty-three-plane mission to Truk. By early February it seemed that the groups could be sent to one of the less formidable homeland targets.[121]

On the basis of favorable weather forecasts, LeMay decided on 3 February to run the mission next day. Not satisfied with the concentration achieved with the M69 bombs used in the Nagoya test, he loaded his planes with E28 500-pound incendiary clusters topped off with frag clusters. Including 38 from the 313th Wing, 129 planes were airborne, but only 69 got through to the target where they dropped 159.2 tons of incendiaries and 13.6 tons of frags from altitudes ranging between 24,500 and 27,000 feet. About 200 enemy

* See above, p. 523.

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fighters attacked, proving that Kobe was not a soft touch. They shot down one B-29 and damaged thirty-five; another burned upon landing at Saipan. The results, however, were far more encouraging than at Nagoya, for post-strike photos showed damage to 2,651,000 square feet of built-up area.[122] Postwar information, agreeing roughly with this estimate, added details: in the area bombed—the industrial southwestern district of Kobe—1,039 buildings were destroyed or seriously damaged, and although casualties were only moderate, 4,350 persons were rendered homeless. Local war production was hit hard. Of a dozen factories accounting for 90 per cent of Kobe's essential war industry, five received damage of varying degrees of severity. One of the two major shipyards had to reduce operations by half. Production of fabric and synthetic rubber was completely wiped out and other industries suffered greatly.[123]

After Kobe, XXI Bomber Command returned to precision attacks. For a while, most of the missions were coordinated with the amphibious assault on Iwo Jima (DETACHMENT),* but support of that operation was incidental to the primary mission of destroying the aircraft industry. Target for the first of the post-Kobe mainland attacks was Nakajima's Ota plant, given highest priority among the assembly plants in the 11 November directive. Ota's importance stemmed from the fact that it was concentrating on the manufacture of a very effective fighter, the Ki-84, called Frank by the Americans. The plant had reached a production peak of 300 planes in December 1944, and although the output had declined to a rate of less than 100 per month by February, this fact was unknown to U.S. intelligence officers.[124] The one attack which had previously been scheduled for Ota (on 3 December) had been canceled because of weather.† Forecasts for 10 February, however, were favorable, and on that morning 118 planes took off, loaded with 500-pound GP's and M76 incendiaries in a weight ratio of 4 to 1. Weather over Ota was even better than predicted and eighty-four planes bombed the Nakajima plant. Bombing accuracy, however, was not impressive: only seven incendiaries and ninety-seven GP's (of which forty-three were duds!) fell in the factory area. Nevertheless, eleven of the plant's thirty-seven buildings were damaged and seventy-four Franks were destroyed. The fact that most of this damage was done by the few incendiaries that fell in the

* See below, pp. 589–90.
† See above, p. 561.

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target area lends some credence to the opinion expressed after the war by Ota officials that a heavier concentration of fire bombs would have destroyed the plant. Heavy losses—twelve B-29's lost and twenty-nine damaged—reflected the increasing effectiveness of Japanese defenses.[125]

Both at Washington and Guam the AAF had showed a disinclination to divert the B-29's to tactical support of ground or sea operations—for example, Arnold and Hansell had resisted MacArthur's efforts to have XXI Bomber Command strike Okinawa airfields to aid his Luzon campaign. The campaign for Iwo Jima, however, offered a unique opportunity in that B-29 attacks against homeland industrial targets could be considered as indirect support for the amphibious assault.* By agreement with CINCPOA, LeMay scheduled a mission against Tokyo for 15 February, D minus 4 at Iwo. Since weather forecasts ruled out Tokyo but were favorable to Nagoya, the command sent 117 B-29's back to visit Mitsubishi's engine works at that city. On the way, they hit an unexpected cold front that broke up the formations, so that only thirty-three planes bombed the primary target; they caused a fair amount of superficial damage, particularly in the as yet untouched No. 10 Works, but did not greatly affect production. Most of the others unloaded on Hamamatsu, apparently with considerable effect.[126]

On 19 February, D-day at Iwo, LeMay directed his planes to the familiar Musashino target, hoping to discourage air reinforcements for the beleaguered island. Two days before, the Navy had staged a carrier attack in which low-flying planes, using small bombs and rockets, had done substantial damage at Musashino.[127] But on the 19th, weather again baffled the B-29's; frontal conditions made the trip out difficult and thick clouds hid Musashino completely. Crews had been briefed to hit Tokyo port and urban areas as a secondary target, and 119 B-29's (out of 150 dispatched) dropped on those districts by radar. Visible damage covered a total area of 102,600 square feet and included 2 important objectives, a spinning mill and the Sumida River railroad yard and bridge.[128] The mission merely added to the cumulative evidence that precision bombing under existing conditions was not paying dividends. Though still unwilling to launch the all-out incendiary attacks against major cities until the B-29 force had been built up, Washington wanted more experimentation with fire bombs. On 12 February Norstad reminded LeMay of the inconclusive results ob-

* See below, pp. 589–90.

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tained in two test incendiary missions and directed another "major incendiary attack" to secure more accurate planning data. Norstad recommended Nagoya as target and accorded the mission a priority second only to the two top-billed engine plants.[129]

The interest in area fire bombing was also shown in a new target directive issued on 19 February. Although the primary mission remained the "destruction of Japanese engine aircraft plants" (Nakajima-Musashino in Tokyo, Mitsubishi-Hatsudoki in Nagoya, Aichi in Nagoya, and Mitsubishi's No. 6 Engine Plant in Shizuoka—in that order), for "secondary visual attack or for diversionary reasons," missions were to be directed 1) against selected urban areas in incendiary tests as directed, and 2) against the principal aircraft assembly plants. If radar conditions prevailed, primary targets were to be urban areas in Nagoya, Osaka, Kawasaki, and Tokyo, in that order. In fulfilling its other mission—support of Pacific operations—the command was to attack only its listed targets unless specifically directed by Washington.[130] This new target directive thus included one important revision —it elevated "test" incendiary raids to a priority higher than assembly plants. And this was a clue to the nature of future operations.

LeMay was already committed to a mission in support of DETACHMENT on D plus 4 or 5, a maximum strike in either the Tokyo or the Nagoya area. In either case, the target would be an engine plant—Musashino if weather permitted a visual strike, or Mitsubishi-Hatsudoki if radar conditions prevailed.[131] As the target date approached, however, forecasts for cloud over Tokyo and high winds over Nagoya made either alternative unattractive. LeMay then decided to hit Tokyo on the 25th with a maximum fire-bomb mission, using one 500-pound GP in each B-29 for spotting purposes and filling up to capacity with E46 incendiaries.[132]

The number of planes dispatched per mission had increased during the last month as more B-29's came in and as maintenance facilities improved. The mission of 25 February was by far the largest yet sent out by XXI Bomber Command, with 231 Superforts airborne. This increase in force was made possible by the participation of planes from the newly arrived 314th Bombardment Wing (VH), commanded by Col. Carl R. Storrie.[133] The wing had been assembling at North Field on Guam since 8 February, when air echelons of the 19th and 29th Groups had flown in. On the 25th the wing still had less than a third of its authorized aircraft and had completed only part

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of its shakedown training, but LeMay was confident that the crews assigned to the Tokyo mission would make out.[134] In all, 172 planes got over the target and dropped 453.7 tons of bombs. Results, like the size of the effort, exceeded anything achieved before. Heavy undercast precluded strike photos, but prints obtained from later reconnaissance missions revealed that about a square mile of the urban area had been destroyed or damaged.[135] Specifically, to cite Tokyo police records available after the war, 27,970 buildings had been destroyed and casualties had been numerous.[136]

This was the "conclusive" test of the fire bomb that the Twentieth Air Force had been asking for and the lessons learned were soon to be exploited. But on 4 March LeMay sent his planes over the familiar route to Musashino—now called by its proper designation, Musashino-Tama (Musashi)—for another precision strike. This top-listed target, which had been visited seven times by the B-29's and once by carrier planes, still stood virtually intact. Repeated failures, as Norstad had irritably reminded LeMay, lent added importance to the target.[137] The force dispatched on the 4th was the largest ever directed against the target—192 planes. But Nakajima's luck held. The area was again heavily clouded and the planes dropped elsewhere by radar—159 in urban areas of Tokyo and 17 on last resort targets. Results in all cases were unobserved.[138]

This eighth fiasco at Musashi marked the end of a well-defined phase of XXI Bomber Command's operations. The effort to knock out the Japanese aircraft industry by high-altitude, daylight precision bombing of carefully selected targets had failed. Production of aircraft engines, not grossly off scheduled programs when XXI Bomber Command came to the Marianas, fell off sharply during the last two months of 1944 and production of aircraft declined slightly during the same period. In neither case, however, could the shortages be accounted for by destruction wrought by the B-29's; indeed, the output of Franks at Ota, it has been shown above, had decreased from 300 a month to 100 before the first air strike.* Not one of the nine high-priority targets had been destroyed, although Akashi had been effectively crippled and production had been slowed down at Mitsubishi's engine and assembly plants at Nagoya and at Nakajima-Ota. Musashi had suffered only 4 per cent damage after 835 B-29 sorties had been sent against it; Navy planes had done more harm in a single

* See above, p. 570.

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strike.[139] Probably the indirect effects of the B-29 raids were most important: with the fall of Saipan, Japanese industrialists had begun to lose confidence in their supposed immunity from air attack. Although under governmental pressure for increased production, they began, with the first attacks on Nakajima and Mitsubishi, to hunt for underground or forest cover, and the official directive for dispersal issued in mid-January merely served to quicken a process already well under way. This radical change in manufacturing techniques, never as efficiently conducted as the similar movement in Germany had been, explains in part the slowdown in production in late 1944 and early 1945.[140]

The indirect results—and indeed some of the direct results—of the B-29 campaign were not thoroughly appreciated by XXI Bomber Command at the time, and a balancing of visible damage against the effort expended was discouraging. In 22 missions involving 2,148 sorties the command had dropped on Japan 5,398 tons of bombs. Only about half of the planes had bombed primary targets.[141] Losses had been high, rising in January to 5.7 per cent of bombers airborne. Bombing from altitudes in the neighborhood of 30,000 feet, the Superforts suffered relatively little from flak. Fighter interception, however, was often aggressive and effective, the more so because the restricted pattern of B-29 attacks allowed the enemy to concentrate his fighters in the Tokyo-Nagoya area. The long overwater trip to target and back, without a friendly base en route for refueling or repair, took its toll of wounded or malfunctioning planes.[142] These difficulties were reflected in the statistics of losses incurred through February: twenty-nine B-29's were lost to enemy fighters, one to flak, nine to a combination of fighters and flak, twenty-one to operational difficulties, and fifteen to unknown causes.[143]

After V-J Day, the United States Strategic Bombing Survey analyzed the unsatisfactory performance of XXI Bomber Command during its first three months of operations. They concluded that the failure stemmed in part from a tactical error, the continued adherence to the conventional doctrines of precision bombing. But many of the contributing factors lay beyond the control of the command's leaders, and in general these were the factors described by Hansell in his final report to Arnold on 14 January. Like its sister organization in the CBI and VIII Bomber Command in the ETO, XXI Bomber Command had experienced the usual troubles of a pioneering organization. The sup-

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porting services—maintenance, supply, weather, communications, reconnaissance, and air-sea rescue—had developed slowly in an area newly won from the enemy and under a theater command whose first interest was not strategic bombardment.[144]

During the whole period the command operated with inadequate facilities. Though the deployment of B-29's was consistently behind schedule, it still outpaced the efforts of Navy construction battalions and aviation engineer units to provide proper bases. Each successive wing to arrive had to initiate operations from a single runway while others were being prepared. For inexperienced crews it was an arduous task merely to get a force airborne, to start and check their engines and follow the tight take-off schedule without overheating or fouling the engines by excessive ground idling time. Assembly, difficult at best on high-altitude missions, was complicated by congestion on the single-strip fields; the long interval between first and last plane airborne (238 minutes on one mission, 193 on another) increased the already heavy fuel consumption required by long missions and the climb to bombing altitudes of 30,000 feet. Thus the B-29's theoretical bomb load of ten tons was reduced to an actual three tons, and the slender fuel reserve made it impossible to check navigational errors or to compensate for headwinds. With the cheerless prospect of a night return over vast stretches of enemy waters as gas-tank gauges sank, many crews were forced to turn back short of the objective or to bomb targets of opportunity.[145]

Operational hazards were aggravated by maintenance difficulties. Hardstands were overcrowded, group and depot installations were completed slowly. Initially, each wing's service groups contained so many inexperienced mechanics that intensive training programs had to be conducted simultaneously with routine combat maintenance. An improper balance of supplies hampered repairs as well as operations. Maintenance failures (and, for a while, poor technical inspection) were responsible for most of the numerous aborts: for 90 per cent in November, 85 per cent in December, 66 per cent in January, and 64 per cent in February.[146] In terms of total effort, the planes aborting because of maintenance failure amounted to 25 per cent of all those scheduled in November and December, 23 per cent in January, and 16 per cent in February.[147]

The most serious obstacle to successful bombardment was weather. Severe frontal conditions, frequently encountered on the trip north

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from the Marianas, increased fuel consumption, scattered formations, and made navigation so difficult that many crews missed the landfall entirely. Over the target, crews rarely found atmospheric conditions suitable for precision bombing. The proportion of planes bombing visually had diminished progressively through the winter months: 45 per cent in December, 38 per cent in January, 19 per cent in February.[148] Radar bombing seldom proved successful. The AN/APQ-13 radar often malfunctioned at extreme altitudes, and radar operators were in general not sufficiently trained to get maximum results; even under skilled hands its accuracy was not up to the requirements of precision bombing.[149] Cloud cover as a hindrance to bombardment was familiar to the AAF from bitter experience over Europe, but the tremendous winds encountered at bombing altitudes over Japan offered a novel and most disconcerting problem. With wind velocities reaching 200 knots and more, drift was difficult to correct and bomb runs had to be charted directly upwind or downwind. Attacking Japan's best-defended cities directly in the teeth of a 200-knot wind was unthinkable; going downwind the B-29's reached ground speeds in excess of 500 miles per hour, in which case neither bombsights nor bombardiers could function properly. Moreover, the high winds made it impossible for crews to make a second pass if the run-in failed; if a navigational error brought a plane in downwind from target it might not be able to attack at all.[150]

Some of these difficulties decreased as the command grew to full stature, and the efforts begun by Hansell and continued by LeMay had brought improvement—in the rate of aborts, for example. But bombardment results were still far short of expectations, and by early March XXI Bomber Command had come to a crisis. The crisis would be solved by a radical change in bombardment tactics.

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CHAPTER 19

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IWO JIMA

AFTER V-J Day many Japanese leaders professed to have seen in their loss of the Marianas a turning point in the war. They knew of the B-29 and they correctly surmised that the islands had been seized chiefly to serve as VHB bases. Prince Higashikuni, Commander in Chief of Home Defense Headquarters, testified:

> The war was lost when the Marianas were taken away from Japan and when we heard the B-29's were coming out. . . . We had nothing in Japan that we could use against such a weapon. From the point of view of the Home Defense Command, we felt that the war was lost and said so. If the B-29's could come over Japan, there was nothing that could be done.[1]

This appraisal was to prove accurate enough in the long view, but in February 1945 combat crews might have been surprised to learn that a responsible Japanese officer had conceded defeat. Of the ultimate success of the VHB mission they were confident, but so far bombardment results had been less than spectacular and losses had been heavy. Superforts had been destroyed on their bases by enemy intruders; others, in spite of the prince's rhetoric, had been shot down from the skies over Honshu; still others, wounded or bothered by mechanical difficulties, had crashed or ditched during the long flight over unfriendly waters. Both Hansell and LeMay had worked to insure a better air defense of their island bases, to improve the defensive tactics of bomber formations over Japan, to reduce operational losses on missions, and to provide better rescue services for crews forced down at sea. There was no single solution for any of these problems, but the one factor common to all was Iwo Jima, an ugly bit of volcanic rock directly astride of, and about midway along, the route from Isley Field to Tokyo. In Japanese hands the island was a menace to B-29's on the ground at Saipan bases, an obstacle to formations headed for

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Tokyo, a threat to air-sea rescue services. In American hands Iwo would provide a site for navigational aids, an emergency landing field for B-29's in distress, a staging field for northbound planes, a base for fighter escorts, a station for rescue activities.

Iwo Jima was secured on 26 March 1945 after a bloody campaign which has been called by a Marine historian "the classical amphibious assault of recorded history."[2] The assault was largely the work of V Amphibious Corps and a Navy task force, but the operation, like the capture of the Marianas, was primarily for the benefit of the B-29's. Since the XXI Bomber Command took some part in the campaign and Army Air Forces, Pacific Ocean Areas (AAFPOA) expended much of its bombardment effort against the island during the autumn and winter, it is pertinent to describe here the conditions which made the capture of Iwo Jima seem necessary, the campaign itself, and the development of the island into a VHB base.

Defense of the Marianas

With the seizure of the Marianas, U.S. forces had thrust deep into enemy territory. From bases in those islands air power could bring the industrial cities of Japan under sustained attack and harry the routes by which the enemy still sustained forces in the outlying islands. The Marianas operation was a product of the decision at Cairo to shorten the war against Japan; like most short cuts, it involved certain risks which had been deliberately accepted.

Those risks, as they appeared in the summer of 1944 when Saipan, Tinian, and Guam had been secured, were from enemy air—it was unthinkable that the Japanese could retake the islands they had been unable to hold. If the Japanese had no bombers which could match the B-29 in range, they still held island bases from which conventional aircraft could strike at the Marianas. Bypassed Truk lay less than 600 miles to the rear. Farther back the Japs held positions in the Gilbert–Marshall area. Athwart the great circle route from Hawaii to Saipan was Wake Island. Within a radius of less than 400 miles were Woleai, southward, with a landing field and seaplane base, and Yap, southwestward, an important staging point on the Truk-Philippines route. Nearby, the lesser Marianas were still in enemy hands, and though most of those islets served only as a refuge for Japanese soldiers escaping from the major islands, two, Rota and Pagan, boasted airstrips. Northward was the Nampo Shoto, a long chain of scattered islands

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stretching from the 24th parallel to the lower coast of Honshu, with subgroups known to westerners as the Bonin and the Volcano islands. The Bonins owed their name to a corruption of a Japanese term meaning "empty of men," but the name was no longer accurate. Chichi Jima had an airstrip and a large harbor; Haha Jima had two good harbors; and Iwo Jima, a comparatively recent addition to the Volcano group, had two operational airfields with double runways and a third, with a single strip, under construction. On occasion, as many as 175 planes had been counted on these fields,[3] which were only 725 miles from Saipan—well within tactical radius of Japanese planes. Marcus, in the eastern part of the Nampo Shoto, was 825 miles from Saipan; its well-developed air base was an important stage along the outer route from Japan to the Marshalls and Gilberts.

Actually, the danger to the Marianas was more apparent than real. The heavy and sustained American attacks had left the enemy in no condition to launch a serious counteroffensive. His losses in planes and pilots had been disastrous, and in the face of the overwhelming superiority of U.S. land- and carrier-based air forces, he was unable to exploit the bases he still held. In the Gilberts and Marshalls battered Japanese garrisons did little more than keep alive. Truk, once exaggeratedly rated by Allied intelligence as the greatest naval base in the west Pacific, had been bombed into impotence. At Marcus, Wake, Yap, and Woleai, beleaguered forces labored to keep airstrips in repair for planes which seldom appeared. Only the Nampo Shoto could be counted a serious menace to B-29's operating from the Marianas.

However slight the peril from other island bases, Admiral Nimitz, commander of U.S. forces in the Pacific Ocean Areas, could ill afford to neglect them. Neutralization by air and interdiction of the sea lanes had to be continued until war ended. Neutralization, deadly dull and without much in the way of visible results, occasionally fell to Navy or Marine air units, occasionally to B-29 groups in need of combat training, but the wheel horse in this task, as in the air defense of the Marianas, was Maj. Gen. Willis H. Hale's diminutive Seventh Air Force, which on 1 August 1944 came under the control of Lt. Gen. Millard F. Harmon's newly activated Army Air Forces, Pacific Ocean Areas.[4] Harmon was also deputy commander of the Twentieth Air Force, charged with coordinating B-29 operations with Nimitz' headquarters.

The Seventh's few combat units were widely scattered and the

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command setup was complicated. Administrative control was divided between Seventh Air Force, VII Fighter Command, and 7th Fighter Wing. For operations, most combat units were under the commander of Task Force 59 (ComAirForward) and, later, his successor, the commander of Task Force 93 (StratAirPOA), who after 6 December was identical with Commanding General, AAFPOA.* But there would be exceptions: the 494th Bombardment Group (H), after its arrival in the Palaus in October, fought under FEAF in the Philippines campaign; at Okinawa the first AAFPOA units to arrive served with Task Group 99.2 (Tenth Army Tactical Air Force); and units of VII Fighter Command were directed by the commander of Task Force 93 in strikes against the Nampo Shoto, by the commander of Task Force 94 (ComForwardArea) in island defense, and by XXI Bomber Command in long-range missions over metropolitan Japan.†

Thus, although the Seventh took on additional responsibilities after its incorporation into AAFPOA, the bulk of its missions, as before, were for neutralization or interdiction; new targets were added and various units moved to new bases, but otherwise there was little to break the monotony of the campaign. From Kwajalein, some of the B-24's of the 11th and 30th Bombardment Groups continued to stage through Eniwetok to strike at Truk, where the Japanese base, though effectively reduced during the Marianas campaign, still needed policing; between 1 August and 16 October the B-24's went against it twice a week for a total of 499 sorties.[5] Occasionally the B-24's went out in training flights to bomb Wotje, Mille, Jaluit, and Wake. The B-25's of the 41st Bombardment Group (M) continued to raid Nauru from Makin and Ponape from Engebi.[6] Though none of these islands offered much in the way of a target and enemy reaction was usually feeble, constant surveillance, if tedious, was a necessary part of the strategy which had proved so successful to that time.

As AAFPOA units moved into the Marianas they found a livelier war. The 318th Fighter Group and one squadron (the 48th) of the 41st Bombardment Group had flown in after the assault troops had landed at Saipan and had rendered valuable close support in the seizure of that island, Tinian, and Guam.‡ Once the islands were secured, the 48th went back to Makin, and the 318th's P-47's, reinforced by

* See above, p. 529.
† See above, pp. 524–25.
‡ See Vol. IV, 690–93.

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P-61's of the 6th Night Fighter Squadron, took over the defense of the newly won bases. The P-47's were also responsible for neutralizing lesser islands of the archipelago. For most of the islets an occasional visit was sufficient, but on Pagan an industrious garrison of perhaps 3,600 men repaired runways as fast as they were damaged; from August through March the P-47's flew 1,578 sorties against that target.[7]

The B-24's had begun moving into the Marianas in August, and by the end of October the 30th Group was at Saipan, the 11th at Guam. From their new bases the heavies still visited Truk, but increasingly they found their chief mission northward to the Nampo Shoto. On 11 August the 30th Group had sent 18 B-24's against Chichi Jima in the Bonins and on 10 August had begun the neutralization campaign against Iwo Jima, previously hit by carrier strikes during the assault on the Marianas.[8] Raids against those Japanese bases, and Haha Jima, became regular: against Iwo alone the Seventh Air Force dispatched ten missions in August, twenty-two in September, sixteen in October.[9] As the B-29's swung into action, Iwo Jima took on a new significance.

On 2 November, a week after the 73d Bombardment Wing's first practice mission against Truk, nine Japanese twin-engine planes swooped down for a low-level attack on Isley and Kobler fields. The intruders did little damage and three were destroyed. On the 7th there were two raids of five planes each and again the enemy lost three aircraft without doing much harm. There was then a lull until the B-29's turned against Honshu.[10] Early in the morning of 27 November two twin-engine bombers came in low, caught the Superforts bombing up for the second Tokyo mission,* and destroyed one, damaged eleven.[11] At noon on the same day, while the 73d's formations were over Tokyo, ten to fifteen single-engine fighters slipped through the radar screen for a low-level sweep over Isley and Kobler in which they destroyed three B-29's and badly damaged two others.[12] AAF fighters got four of the raiders; AA gunners shot down six others but also destroyed a P-47 under circumstances officially described as "inexcusable."[13] Next night some six or eight enemy planes bombed from high altitude without inflicting much damage. On 7 December, in a combined high-low attack Japanese intruders destroyed three B-29's and damaged twenty-three.[14] Using the same tactics, a force of about

* See above, p. 560.

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twenty-five planes staged a party Christmas night in which they destroyed one B-29, damaged three beyond repair, and inflicted minor damage on eleven.[15]

This was the last large attack, though minor raids continued until 2 January, when the last Japanese bomb was dropped on Saipan, and enemy aircraft were sighted there as late as 2 February. In all, the Japanese had put more than eighty planes over Saipan and Tinian and had lost perhaps thirty-seven. This rate of loss spoke well of fighter and AA defense, and in normal operations would have been prohibitive to the enemy. But the intruders had destroyed 11 B-29's and had done major damage to 8 and minor damage to 35; trading fighters and medium bombers for B-29's in that ratio was not a bad exchange for the enemy, nor were his casualties appreciably higher than the toll of 45 dead and more than 200 wounded which he exacted.[16]

Although the enemy raids did not interfere seriously with the strategic campaign, they were an expensive nuisance which, if unchecked, could have become more costly. Serious or not, the losses were wasteful. Since the initial disasters at Wheeler, Hickam, and Clark fields, AAF commanders had been very sensitive about having their planes caught on the ground. Arnold was particularly touchy on this score, and because each B-29 represented a great investment, he had early expressed grave concern over defenses being provided for the VHB bases on Saipan. To bolster those defenses, the theater had been provided with a specially designed microwave early warning radar set (MEW),* which was supposed to be effective for planes coming in at low or high altitudes.[17] Despite Arnold's concern, there seems to have been little interest in the theater in installing the set on Saipan. Hansell and Hale both thought it would be more useful on Iwo Jima when that island was in U.S. hands and apparently Harmon agreed.[18] The Navy, with final authority in the POA, felt that the air defense system was reasonably adequate and was reluctant to divert manpower from other high-priority projects. Accordingly, installation of the MEW drew a low priority.[19]

The early raids quickly dispelled any complacency about defenses, particularly since the enemy repeatedly slipped in under the radar screen—on the night of 27 November construction lights at Isley were still on when his planes struck![20] In a frantic effort to detect future

* This was a pre-production set built by the radiation laboratory at the Massachusetts Institute of Technology.

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intruders, Vice Adm. John H. Hoover, ComForwardArea, stationed 2 destroyers 100 miles northwest of Saipan to provide early radar warning, and an AN/TPS-3 radar was rushed to Saipan from Oahu by air.[21] The destroyers in some instances gave ample warning, but on other occasions the enemy planes still managed to come in unannounced.[22] As B-29's were smashed on the hardstands and strips at Saipan, Arnold's choler over the handling of the MEW increased, especially since he had sent the set to Saipan despite urgent requirements in Europe.[23] Finally, on 3 December, Nimitz ordered Hoover to give highest priority to installation of the MEW, but it was not in operation until after the last Japanese bomb fell on Saipan.[24]

Although this inglorious history of the MEW serves to point up the difficulties inherent in a divided command, it is not the sole clue to the damage suffered at Saipan. The best of radar systems provided only passive defense, and in an attack resolutely pressed home enough enemy planes could escape the radar-alerted fighters and flak to menace aircraft on the ground. Both AAF and Navy commanders favored an aggressive policy—neutralization of the bases whence the enemy was mounting his raids.

It was commonly, and correctly, assumed that the Japanese planes were staging down from the homeland through Iwo Jima's two operational fields. The risk of air attack had been realized even before the invasion of Saipan, and it was to prevent such tactics that carrier planes and the B-24's had been sent against Iwo's strips. But since the two groups of heavies had also been policing Truk, the Marshalls, and other islands in the Nampo Shoto, their efforts were spread too thin.[25] Navy authorities, concerned with the build-up of Japanese defenses in the Nampo Shoto, had directed much of the B-24 effort against shipping in the harbors of Chichi Jima and Haha Jima, evidently envisioning masthead attacks. In the heavily defended harbors such tactics were ill suited for the lumbering heavies, and at normal bombing altitudes the formations were too small to be effective. Hale protested this misuse of his B-24's, but antishipping strikes continued until 25 November—with continued poor success.[26]

The first Japanese raids against Saipan, however, focused attention on Iwo. On 5 and 8 November Hansell sent his B-29's against the island in training missions* and the rate of B-24 attacks was stepped up. Nimitz informed Hoover on 24 November that Iwo's installations

* See above, p. 550.

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would become immediately the primary target for all of Task Force 94's aircraft,[27] thus putting an end to the antishipping strikes. By the end of the month the heavies had run thirty missions against the island.[28] In spite of them, however, the first Tokyo mission on 24 November provoked more serious raids from the enemy. Therefore, Nimitz sent Harmon to Saipan to try an all-out attack on Iwo's installations by air and surface forces; if successful, such a coordinated strike might make it possible for the two groups of heavies to keep the Japanese airfields under control.[29]

Harmon arrived at Saipan on 5 December with plans for using Cruiser Division 5 and all available P-38's, B-24's, and B-29's in a daylight attack. After a hurried conference with Hoover, Hansell, and others, Harmon scheduled the bombardment for noon on the 7th. Postponed because of weather, the attack was delivered on the 8th, although the skies had not cleared. At 0945 twenty-eight P-38's swept over the island, followed at 1100 by the B-29's and at noon by the Liberators. Hoover's crusiers began seventy minutes of shelling at 1347. The bomb load carried by the planes forcefully illustrated the difference in performance between the heavy and very heavy bomber at 725 miles tactical radius: the 62 B-29's dropped 620 tons, 102 B-24's only 194 tons.[30] All told, enough metal was thrown to produce a good concentration on Iwo's eight square miles, but because the bombers had been forced to loose by radar, results, so far as they could be judged from photography—handicapped, like the bombing, by adverse weather—were much less decisive than had been expected. Even so, the enemy's raids on Saipan stopped until 25 December.

Arnold, worried about losses at Isley, had given his enthusiastic approval to the diversion of B-29's from their strategic mission in this one instance,[31] but thereafter the job of neutralization was turned back to the B-24's. Harmon soon lost his earlier confidence that the bombers—or any other force—could keep the island completely neutralized.[32] His pessimism was well founded. During December the 11th and 30th Bombardment Groups (H) flew 79 missions against Iwo; between 8 December and 15 February there was no day on which they were not over the island in at least 1 strike;[33] and from November through January they flew 1,836 sorties. Joint attacks with surface ships were repeated on 24 and 27 December, 5 and 24 January. Night snooper missions, designed to impede repair activities, were sent out in the wake of daylight strikes. Yet at no time

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JAPANESE ATTACK ON ISLEY FIELD, 27 NOVEMBER 1944

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JAPANESE WEATHER

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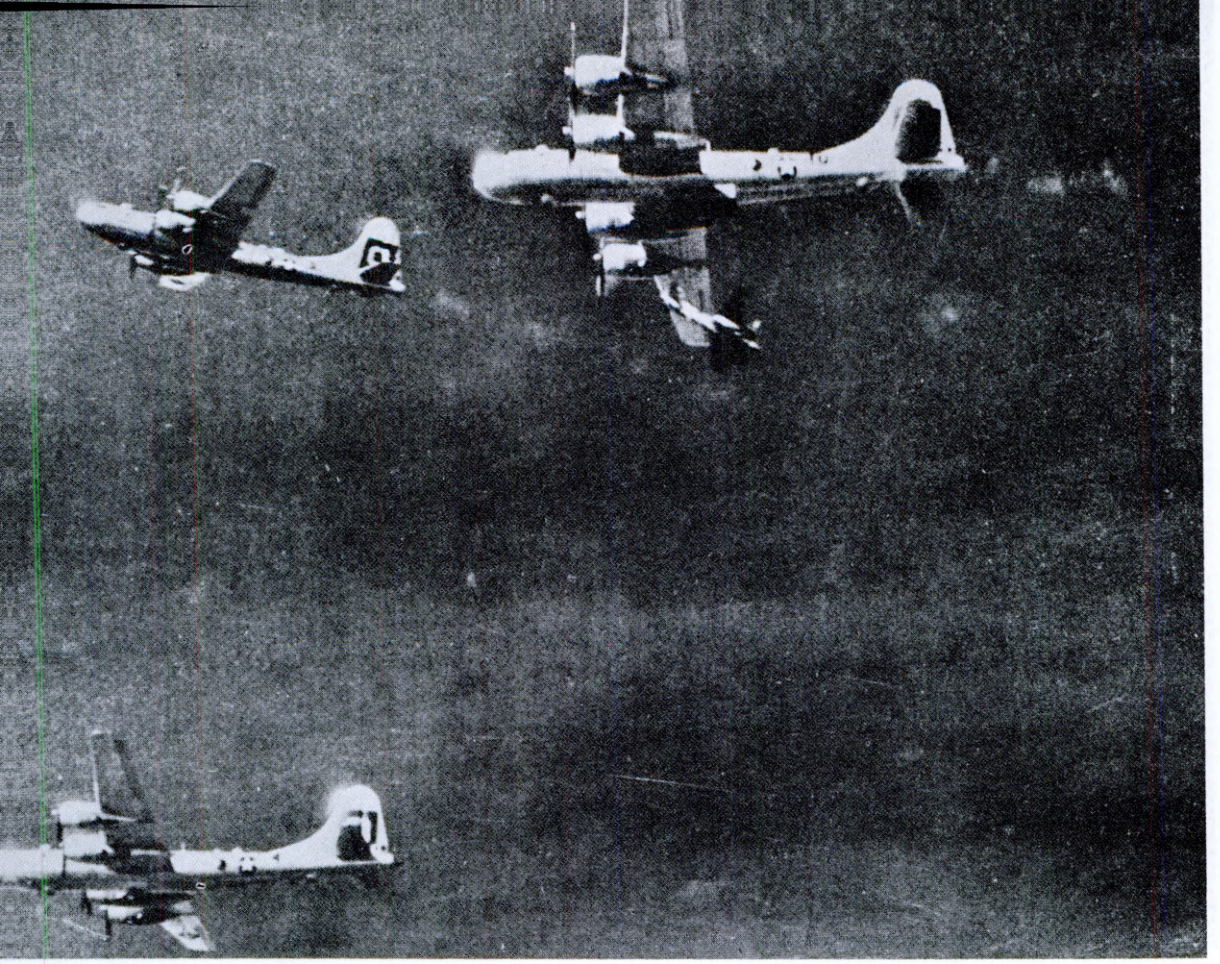

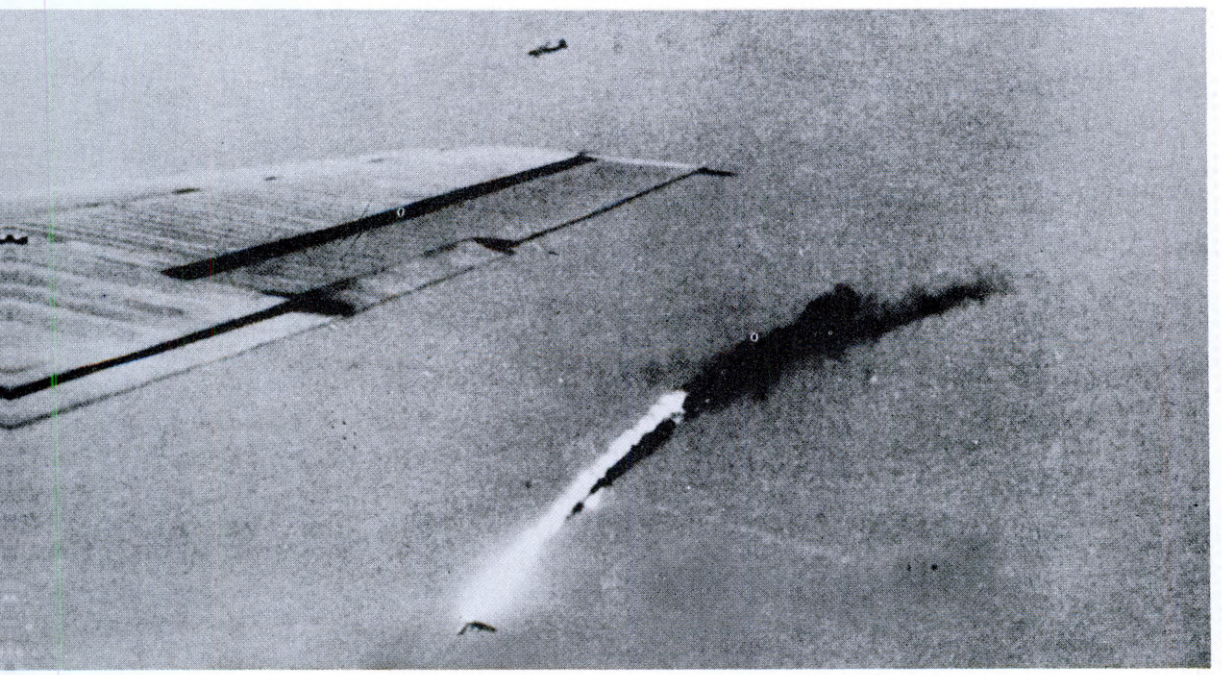

JAPANESE DEFENSES

Above: Fighter Making a Pass under B-29

Below: Direct Hit on B-29 by Flak

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P-51'S ON IWO JIMA

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were all of Iwo's strips rendered inoperational and no single strip was out of service for a whole day: the destructive Christmas raid on Saipan was run the day after a heavy air-sea bombardment of Iwo.[34] The efforts of the Seventh Air Force were not wholly wasted, however, in spite of the enemy's industry in filling craters day by day. Although it may have been their heavy losses over Saipan that induced the Japanese to discontinue their raids after 2 January, the steady bombardment by the Seventh's B-24's worked toward this end by discouraging, if not wholly denying, the use of the staging fields.

Even during the months when Iwo absorbed most of its attention, the Seventh went on with its routine neutralization of other enemy bases which could have threatened the Marianas. That mission was to continue until the summer of 1945, and it is useful here to interrupt the Iwo Jima story with a brief summary of operations elsewhere.

Marcus, through which planes could stage from Japan to Saipan—though with longer flights than via Iwo—was kept under constant surveillance, usually by armed reconnaissance missions of two or three B-24's. Between September 1944 and July 1945 such missions totaled 565 sorties. Using Marcus as a target for shakedown missions, XXI Bomber Command dispatched eighty-five B-29's against it during the last month of the war.[35] Woleai was visited occasionally by AAFPOA planes, as was Yap, until responsibility for the latter island was turned over to a Marine air group at Ulithi in November.[36] Truk, in spite of its severe mauling earlier, was considered a potential danger spot which needed more than sporadic armed reconnaissance, and missions were sent against its installations until the end of the war. Until 26 June 1945 it was AAFPOA's B-24's that did most of the work there, flying 1,094 sorties after 1 August 1944, of which 595 came after the 2 groups had moved from Kwajalein to the Marianas. The half-dozen or so fighters that the Japanese managed to keep patched up did not offer much resistance, but AAFPOA was generous with escorts, sending P-38's in 75 sorties, P-47's in 234 escort and strafing sorties.[37]

Until the assault on Iwo Jima the B-24's continued the antishipping campaign in the Bonins. After 6 November there were no more bombing attacks, but with technical aid from Navy officers the 42d Squadron carried out a number of mining missions against harbors and anchorages in the islands. By 12 February the 42d had planted 275 mines, about half of them around Chichi Jima.[38] In his official report Harmon said that the squadron had not been successful in its

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objective of clearing the area of all ships over 2,000 tons, and the Joint Army-Navy Assessment Committee credited the B-24's with sinking only a single ship with its mines. Nevertheless, there was some belief in the Marianas that Harmon had deliberately minimized the effectiveness of the campaign "because mine-laying was not considered a proper function for B-24 bombers."[39]

Capture and Development of Iwo Jima

Japanese raids against B-29 bases, though troublesome, were not important enough alone to have justified the cost of capturing Iwo Jima: the decision to seize the island was made a month before the raids began and they had ceased seven weeks before Iwo was assaulted. Meanwhile, the island had proved a hindrance to the VHB campaign in other ways. Since fighters based on the rock had attacked B-29's en route to or from Japan, to avoid interception the bombers had been forced to fly a dogleg course which complicated navigation and reduced bomb loads; even then, enemy radar at Iwo gave early warning to Honshu of northbound Superforts. But the idea of seizing the island derived less from its menace while in Japanese hands than from its potential value as an advanced base for the Twentieth Air Force.

The B-29 had been designed in 1940 to operate without escort, depending on altitude, speed, and firepower for protection. Later experience in Europe with the B-17 and B-24 had shown the need of fighter escort in attacks on heavily defended strategic targets, and while no fighter had been built with true VLR characteristics, the range of conventional escort planes had been so extended by 1944 that Arnold's planners had become interested in the possibility of using them with the B-29's, not from Saipan but from some island nearer to Japan. On 15 May 1944 Col. R. C. Lindsay of AC/AS, Plans, had recommended to OPD's Staff Planning Group that islands in the Bonins and Ryukyus be seized for this purpose.[40] The suggestion, though carrying strong AAF backing,[41] aroused little enthusiasm in OPD, which thought that after the capture of Formosa—then an accepted operation—the Bonins and Ryukyus would become metropolitan Japan's last bulwarks and would be defended so desperately that the cost of their capture would be incommensurate with their value as offensive bases.[42] The air planners were not, however, convinced. On 14 July Arnold sent a memorandum to the JPS calling attention

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to the Ki-84, a new and heavily armed fighter with which the Japanese might be able to inflict prohibitive losses on B-29's over the home islands; to provide escort for the Superforts, he recommended seizure of Iwo Jima, within P-51 radius of Tokyo.[43] JWPC, to whom the paper was referred, indorsed the proposal, subject to the proviso that it not interfere with the Formosa operation.[44] This was on 21 July; a week later, assuming with his usual optimism that the JCS would go along, Arnold approved a project for assigning to XXI Bomber Command as many as 5 fighters groups, to include P-51's and P-47N's, the latter rated as having a tactical radius of 1,350 miles.[45] Eventually, it was assumed, those fighters might conduct offensive sweeps over Japan as well as provide escort. Iwo Jima's runways, moreover, if extended to VHB specifications, could serve as emergency landing fields or as staging bases for the B-29's.

Harmon presented these arguments to Nimitz at Oahu, and during September the latter turned against the Formosa operation, favoring instead assaults by POA forces against the Nampo Shoto and the Ryukyus.* King accepted this view and at his recommendation the Joint Chiefs on 2 October scratched Formosa and set up the Nampo Shoto invasion for 20 January, Okinawa in the Ryukyus for 1 March. Their directive to Nimitz stipulated that the island selected in the former chain must be capable of supporting several airfields.[46] That meant Iwo Jima.[47] The island, whose name was unknown to the vast majority of American citizens, was to become associated in most minds with the U.S. Marines who took it foot by foot with rifle and grenade and flamethrower; but the sole purpose of the campaign was to provide an advanced base for the strategic bombardment of Japan.

Planning for the operation (coded DETACHMENT) began at once.[48] Over-all control fell to Adm. Raymond A. Spruance, Commander of the Fifth Fleet. Under him, strategic control was vested in Vice Adm. Kelly Turner, Commander, Joint Expeditionary Force, and Lt. Gen. Holland M. Smith, USMC, Commander, Joint Expeditionary Troops. Tactical commanders were as follows: of the assault troops, V Amphibious Corps, Maj. Gen. Harry Schmidt, USMC; of the Amphibious Support Force, Rear Adm. W. H. P. Blandy; of the Gunfire and Covering Force, Rear Adm. Bertram J. Rodgers.[49] The plan to base five groups of long-range fighters in the area led to the long debate over their control between Harmon and Arnold's staff

* See above, pp. 390–92.

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which has been described in an earlier chapter.* Eventually this was to be decided in favor of XXI Bomber Command, but Nimitz accepted the groups subject to their performing tactical and defense duties as well as escort. Accordingly, long-range fighters as well as Seventh Air Force B-24's were to participate in the assault phase of DETACHMENT and control was vested in Harmon when he became commander of the Strategic Air Force, POA (Task Force 93) on 6 December.[50]

The time factor was crucial. Sandwiched between two major invasions, Lingayen Gulf and Okinawa, DETACHMENT had to be pushed through with dispatch. Its demands for support from carrier and surface forces had to be coordinated with the requirements of those other campaigns and of a carrier attack against Honshu in mid-February by Mitscher's Task Force 58, a project much esteemed by the Navy. Available intelligence indicated that Iwo Jima had a strong garrison, difficult terrain, and was heavily fortified—and events were to prove that each of these items was underestimated. To reduce the hazards of the invasion fleet—Iwo was only 650 miles from Japan—the assault should be completed within a few days of launching. Marine planners, wishing to hold down losses in what at best promised to be a bloody struggle, insisted on a thorough bombardment by aircraft and naval gunfire; particularly they wanted extensive preliminary fire by battleships, whose heavy guns they had found more accurate and more effective than aerial bombs against dug-in defense points. They asked for ten days' fire. Navy planners, viewing Iwo as only one of a number of scheduled operations, scaled down that request and the debate continued. In the long run, heavy fighting in the Philippine seas and the desire for additional antiaircraft guns for Task Force 58 reduced the battleship support available for DETACHMENT to an amount far below the estimates of the Marines. Events in the Philippines also disrupted the time schedule. When the Lingayen landing was postponed from 20 December to 9 January, the original D-day for DETACHMENT was no longer practicable. The date was set back, first to 3 February, then to the 19th. Further delay would have jeopardized Okinawa, which was postponed to 1 April.[51]

The operational plan, changed in detail a number of times, was essentially in final form by 31 December.[52] The campaign was to begin on D minus 20, when the Seventh Air Force would step up its B-24

* See above, pp. 529–31.

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attacks on Iwo Jima and Chichi Jima. On D minus 3, Admiral Rodgers' force—eight battleships (six of them old), six cruisers, and sixteen destroyers—was to begin preliminary fire, now limited to three days, and Admiral Blandy's escort carriers were to provide initial air support. Admiral Mitscher's task force was ordered to support the launching at Iwo with its heavy guns and planes after it had made its strike against Honshu on D minus 3. The actual assault on the island was to be delivered by the 4th and 5th Marine Divisions, with the 3d in reserve.

Predicated on a brief but bloody battle (three or four days instead of the four weeks actually required), plans called for an early development of three airfields, to be operational by D plus 7, D plus 10, and D plus 50 respectively.[53] As soon as possible after the assault the responsibility for island defense was to pass from the Navy to the Air Defense Command, to be headed by Brig. Gen. Ernest Moore of VII Fighter Command. Moore was to be given a sizable force: signal air warning and antiaircraft artillery units; 222 P-51D's of the 15th and 21st Fighter Groups; 24 P-61D's of the 548th and 549th Night Fighter Squadrons; and a Marine detachment—18 TBF's of VMTB-242, later to be relieved by 12 PBJ's of VMB-612. Subsequently another fighter group, the 306th, was to arrive with 111 P-47N's.[54]

The XXI Bomber Command was asked to support DETACHMENT by coordinating its strategic missions with Task Force 58's strikes and by assigning B-29's to search and reconnaissance duties. Although the Twentieth Air Force had consistently resisted efforts to divert its B-29's from their primary mission to the support of other Pacific operations,[55] it would have been difficult to refuse aid for DETACHMENT, which was planned for its own special benefit. Fortunately, a regular strategic mission was agreed upon to keep Japanese planes busy at home, so that both at Washington and Guam there was ready acceptance of Nimitz' proposal to integrate B-29 operations with those of the Fifth Fleet. LeMay, however, who was just taking over XXI Bomber Command, felt that the support originally requested was beyond his capacity and asked for a conference at Ulithi where he might work out with Spruance and Mitscher a more reasonable plan. After the meeting, held on 27 January, LeMay secured the approval of Nimitz and Harmon for the following supporting operations: 1) picketboat searches on D minus 8 and D minus 5; 2) weather-strike missions by three B-29's operating individually against

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Tokyo on three nights beginning D minus 4/3 and against Nagoya on three nights beginning D plus 3/4; 3) major strikes against a primary target in the Tokyo area on D plus 4; and 4) a diversionary raid against Nagoya on D minus 2.[56]

As this agreement was shaping up, DETACHMENT got under way. On 31 January Seventh Air Force B-24's, which since August had been working over airfields and shipping in the Nampo Shoto, began their task of softening up Iwo Jima's defenses. During the next 16 days the Liberators flew 283 daylight sorties (escorted on 3 occasions by some 15 P-38's), dropping 602 tons of bombs and 1,111 drums of napalm; in the same period, B-24's flew 233 night snooper missions, dropping 504 tons of bombs.[57] On 12 February twenty-one B-29's of the 313th Bombardment Wing expended eighty-four tons in a shakedown mission against pinpoint targets on Iwo:[58] gun emplacements on Suribachi Yama, the formidable rock at the southern tip of the island, AA positions, and radar and radio installations.

Bombing results were difficult to assess; in general they were considered disappointing and post-invasion inspection more than verified the pessimism of the early judgments. Bombing at moderately high altitudes and frequently forced by cloudy weather to make radar releases, the Liberator crews simply could not take out the assigned targets, most of which were cleverly concealed and deeply dug in. Napalm was dropped in an effort to burn off the camouflage, but the experiment failed, partly because of inaccurate drops, partly because of the nature of the cover. A Marine intelligence officer later judged that the chief effect of the long bombardment of Iwo was to cause the enemy to build more elaborate underground defenses.[59]

On 15 February, as Task Force 58's fast carriers were moving in for the strike against Tokyo and surface forces were converging on Iwo Jima, LeMay sent out his B-29's in their first support strike. Weather was bad over Tokyo and as a substitute target the planes bombed Mitsubishi's engine works at Nagoya.* At Chichi Jima, fifteen B-24's bombed the airfield but failed to do much damage. On the 16th Mitscher's planes swept in to strike Nakajima's Ota plant, and the next day they hit Musashi at Tokyo in a heavy attack. Weather was so bad in the area that a third strike, provisionally scheduled for

* See above, p. 571.

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the 18th, was canceled and the task force moved down to cover the landings at Iwo Jima.[60]

Meanwhile, Blandy's support force (Task Force 52) had moved into position off Iwo, and at 0800 on 16 February, an hour behind schedule, the big guns on the battleships and cruisers opened up. Mist had delayed the bombardment and low visibility and intermittent rain made it difficult for spotter planes to observe results. The escort carriers managed to put up 239 sorties during the day, but when 42 B-24's came up from the Marianas to hit at targets on Suribachi, Blandy canceled the mission because of unfavorable weather.[61] On 17 February (D minus 2), however, visibility was excellent, and the surface ships moved in to begin a complex schedule of round-the-island firing which had to be coordinated with the work of underwater demolition teams. The escort carriers put in a busy day, launching 336 sorties, which included strikes at defensive positions and antisubmarine and combat air patrols. The Liberators had better luck than on the 16th. Again 42 got up to Iwo, and going in at altitudes lower than usual—4,900 to 5,700 feet—they dropped 832 x 260-pound frag clusters on defense installations just north of Suribachi's crater. Results were rated "good."[62]

Low clouds and occasional rain hampered air operations on the 18th. The escort carriers were able to send up 318 sorties, but when the B-24's appeared the target was so completely covered with cloud that the strike was canceled. Nevertheless, it was a big day for Rodgers' supporting ships. Weakened by a last-minute diversion to Task Force 58 of two 16-inch gun battleships and a cruiser, his force included only five old battleships and six cruisers. In spite of difficulties in observing results of their fire, these ships did an excellent job in destroying defense positions, concentrating especially on the landing beach areas. Their force was too light, though, and the period of preparatory fire too short so that a great majority of the defense installations remained intact.[63]

D-day, 19 February, dawned clear. Task Force 58, its Tokyo strikes completed, had come on for the assault and two of its battleships and thirteen cruisers joined in the neutralization fire as Marines shifted from transports into the landing craft. Between H minus 1 and H-hour (0800 to 0900), while the amphibious tractors maneuvered into position, the warships laid down a barrage, and aircraft

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from the escorts and Mitscher's fast carriers swept in. A strike by 44 B-24's had been scheduled, but when over half of them aborted, only 15 arrived to drop 19 tons of 100-pound GP's on the island's eastern defenses.[64]

The first assault wave hit the beaches northeast of Suribachi at 0900, and under the Navy's barrage moved inland about 200 yards on a 1,500-yard front. By evening 30,000 Marines were ashore: the 5th Division had pushed almost across the island at its narrowest point—just north of Suribachi—but the 4th, against very heavy opposition, had been stopped at the edge of Motoyama Airfield No. 1.[65]

The story of Iwo Jima thereafter is largely that of the Marines, a story of heroic fighting on the ground and under it. The Japanese commander, Lt. Gen. Tadamichi Kuribayashi, had organized his defenses with great skill, and with no room for maneuver the Marines had to pry the stubborn enemy troops out of their intricate cave strongholds. The island was not declared secure until 16 March, and isolated pockets held out even longer.[66] Air played its part in the battle but it was not a leading role: B-29's continued to attack Japanese cities; on 25 February Mitscher's carriers launched another strike against the Tokyo area; carrier planes and the B-24's kept hitting other islands in the Nampo Shoto; and a constant air patrol was maintained over Iwo Jima. Throughout the operation the Americans were thus able to maintain an overwhelming air superiority. There was no enemy air action on 16 February, by which time U.S. intentions had become quite clear, or on the 18th. The only serious air opposition came during the uncertain light of dusk on the 21st, when about a dozen Japanese planes made a low-level attack on a carrier unit. Apparently all the intruders were shot down, but they scored heavily, sinking the *Bismarck Sea* and damaging the *Saratoga*, the *Lunga Point*, and an LST.[67]

From the first day of ground fighting the Marines called for and received close air support against enemy strongpoints. Between 10 August and D minus 4, U.S. forces had dumped 9,616 tons of high explosives on the small island: B-24's, 5,582 tons, B-29's, 1,223; Navy surface ships, 2,405; Navy planes, 406. After the preliminary fire began on 16 February, Navy guns expended 9,907 tons of shells.[68] Thus, the total weight of explosives rained on Iwo Jima amounted to about 2,300 tons per square mile. Yet many of the well-constructed and cleverly concealed positions were untouched[69] and had to be captured

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or sealed up by tank-infantry demolition teams with such direct air support as could be had. During the early days of the battle this service was rendered by carrier-based planes; ground commanders rated the pilots from Task Force 58—some of whom were from Marine squadrons—as better than those from Blandy's escort carriers and felt the loss of the former when the fast carriers departed on 22 February. On three occasions small formations of B-24's were called up from the Marianas to bomb defensive positions,[70] but the Seventh's most important contribution to the ground fighting was through its fighters. The P-51's of the 15th Group began to arrive at Iwo's South Field on 6 March and flew their first mission on the 8th. Beginning on the 10th, the day before the escort carriers left, the P-51's were on station from 0700 to 1830 in flights of eight planes. At the request of ground commanders they strafed and bombed enemy pillboxes, cave entrances, gun emplacements, slit trenches, troops, and stores, flying altogether 125 sorties. Although pilots were inexperienced in close support, they were daring and skilful and learned rapidly under Marine tutelage, pressing their strikes home to minimum altitudes. The aid thus given the ground troops was adjudged "material and timely assistance."[71]

The 15th Fighter Group also furnished daylight combat air patrol: the group put up dawn and dusk flights of twelve P-51's each from 7 to 11 March, after which the patrols were reduced to eight planes. At night two P-61's of the 548th Night Fighter Squadron took over. This routine remained virtually unchanged until the end of the war although the chore was more widely distributed as new units arrived: the 549th Night Fighter Squadron on 20 March, the 21st Fighter Group on 23 March, and the 306th Fighter Group on 11 May.[72]

The dawn and dusk patrols were apt to be uneventful; no planes on combat air patrol were lost to enemy action. Iwo's spotty weather during April and May often kept the patrols grounded and on 20 April was responsible for the loss of five P-61's and three Marine PBJ's which crashed in a heavy ground fog. Night work was more exciting, for the enemy occasionally attempted to bomb the island after dark—his last effort coming as late as 4 August. Japanese planes were able to get past the Black Widows on only three occasions: on 21 May when two bombers killed three men and wounded eleven before being shot down by flak; on 1 June when a single plane dropped a string of small bombs that killed five men and wounded seventeen;

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and on 24 June when two Betty's caused some small damage before being destroyed.[73]

The fighters also took over the job of neutralizing Chichi Jima and Haha Jima, previously targets for the B-24's and carrier planes. The first strike was made on 11 March when the hard pressed 15th Group, its airfield still under occasional enemy artillery fire, sent out sixteen P-51's. With General Moore flying as an observer, the formation divided eight tons of bombs between Susaki airfield and Futami Ko on Chichi Jima. Throughout March the planes went back in daily strikes that differed little from the maiden attempt. Priority targets were operational aircraft, shipping, Susaki airfield, and other military installations, but since enemy planes or shipping were seldom found, the main weight of attack was on the airfield. When Chichi was weathered in, the fighters hit Haha Jima; occasionally they visited the minor islands of the group.[74] These visits continued until the end of the war. Day missions were run on an average of about one every other day, and from 29 March to 20 April P-61's flew nightly harassing raids. Altogether, there were 1,638 sorties. Only two planes were lost to enemy action as opposed to eight lost from operational causes. Inadequate photo coverage made target selection difficult, and in truth there was little on the islands to hit. But the constant pecking away at the islands denied the enemy effective use of the airfield or harbors, and for fighter pilots the missions provided an invaluable transition between stateside training and the difficult VLR combat missions to Japan.[75]

These operations of the P-51's and P-61's had been made possible by the early development of the airfields for which the battle of Iwo Jima had been fought. Along the central plateau of Iwo the Japanese had laid out three airfields, sometimes called, from the neighboring village, Motoyama No. 1, No. 2, and No. 3 or simply South, Central, and North fields. The first had two strips, 5,025 and 3,965 feet long. Central Field had two runways, 5,225 and 4,425 feet, built in the form of an X. The third, with a single strip, never became operational.[76] The basic plan (WORKMAN) for the development of Iwo into an air base, drawn up in October, contemplated the use where possible of existing Japanese facilities, and although the whole complex was to serve primarily as a VLR base, the most pressing job was the rehabilitation of some strips for local fighter use. The WORKMAN schedule, a Navy responsibility, was as follows: at No. 1, one 5,000-foot

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runway was to be rehabilitated for fighter operations by D plus 7; at No. 2, the northeast-southwest runway was to be repaired for fighter use by D plus 10 and the east-west runway extended into a 6,000-foot fighter strip by D plus 50; later, by D plus 110, the northeast-southwest runway was to be extended to 8,500 feet for B-29's and a second 8,500-foot runway was to be built parallel to the first; at No. 3, one 5,000-foot runway was to be ready for fighters by D plus 50. All runways were to be 200 feet wide. Construction was assigned to Cdre. R. C. Johnson's 9th Naval Construction Brigade, made up of the 8th and 41st Naval Construction Regiments and one AAF unit, the 811th Engineer Aviation Battalion. The 8th Regiment was assigned to general construction, the other units to work on the airfields.[77]

Three Seabee units went in with the assault troops on D-day to serve as shore parties and to begin work on the airfields as they were overrun. Determined enemy opposition upset the construction schedule, but as the fields were captured, runways were rapidly made serviceable for minimum operations. One strip on South Field was being used by observation planes as early as 26 February (D plus 7), and by 2 March the other strip was graded to 4,000 feet. On the 4th, DETACHMENT paid its first dividend when a B-29 in distress came in for an emergency landing. Two days later the P-51's came up from Saipan, and from then on, South Field was in constant use while construction was continued. Although work at Central Field was held up by the protracted land battle, on 16 March it too was operational, with one strip graded to 5,200 feet, the other to 4,800.[78]

On that day, Col. William E. Robinson, staff engineer for XXI Bomber Command, landed at Iwo Jima to survey the possibilities of VHB base development. From the point of view of B-29 crews, Iwo's chief importance was that it would make fighter escort possible and serve as a haven for bombers in distress. But the planners had been interested also in its use as a staging base by which the tactical radius of the B-29 could be lengthened or its bomb load increased. It was for combat-loaded Superforts that the 8,500-foot runways had been designed, and the WORKMAN plan had provided facilities for 60 to 90 of the bombers. Robinson was convinced that North and Central Fields could be built to serve as many as 150 B-29's, and after his return to Guam, he gave LeMay an amended base development plan. LeMay approved it on the day it was submitted, 26 March, as did

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Maj. Gen. Willis H. Hale, who since Harmon's death had been serving as deputy commander of the Twentieth. Maj. Gen. James E. Chaney, Saipan's island commander, and Admiral Hoover readily concurred, so that by 4 April Robinson had carried the plan to Oahu where Admiral Nimitz gave his final approval. In Robinson's plan, North and Central fields were to be combined into one huge airdrome covering over 4 square miles (half the surface of the island), with 2 VHB runways, 9,400 and 9,800 feet long, and a 5,200-foot fighter strip.[79]

The engineers found the task of building airfields on Iwo Jima complex and often exasperating. Iwo, which had risen from the sea within the memory of living men, was still a semiactive volcano, and in many places sulphur-laden steam issued from crevices. Some areas that were honeycombed with steam pockets had to be avoided when runways or subsurface gasoline lines were laid out. Although the volcanic ash which covered the island's surface worked more easily than the coral to which Pacific engineers were accustomed and could be readily compacted to sustain B-29 loads, when wet it eroded easily even if compacted, and asphalt could be laid on an ash base only when dry. Unfortunately, heavy rains in the spring months delayed construction by keeping the surfaces wet for as much as a week at a time. Even in good weather progress on the VHB runways lagged, until in April the Seabees began working two ten-hour shifts a day and reduced drastically the effort devoted to construction of their own housing and other secondary facilities. In June the program suffered a setback when an asphalt area of approximately 80,000 square feet at Central Field was ruined by water penetrating the subbase; on another occasion it was necessary to remove the crushed stone and subgrade from some 1,500 feet of asphalt runway.[80]

In spite of these difficulties, the first B-29 runway had been paved to 8,500 feet by 7 July and was in operation; by the 12th it had been paved to its full length of 9,800 feet. The second strip had been graded to 9,400 feet by V-J Day but was never surfaced. The old east-west runway became a 6,000-foot fueling strip. The fighter strip at South Field, in use by fighters since 6 March, was paved to 6,000 feet by July and had 7,940 feet of taxiways and 258 hardstands. At North Field, which in the revised plan was supposed to be incorporated with Central, the job involved new construction in rough terrain. By the end of the war the fighter strip had been paved to 5,500 feet and some 10,000 feet of taxiway had been graded. Fuel was supplied through

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2 tank farms—one with a capacity of 80,000 barrels of aviation gasoline, the other storing 160,000 barrels of avgas, 50,000 barrels of motor gasoline, and 20,000 barrels of diesel oil—and through small installations at each field. There was at Iwo Jima practically no harbor development and all unloading was across the beaches.[81]

In this fashion Iwo Jima, once a threat to the VHB campaign against Japan, was transformed into a base whose chief purpose was to support that campaign. The work had not been finished by V-J Day, but during the six months between the landing of the first Superfortress on Iwo and the formal surrender in Tokyo Bay, the island was in constant use by VLR forces. Inevitably the question arose, "Was Iwo's capture worth the cost?" Responsible leaders, using the impersonal calculus of high strategy, have agreed that it was. Lt. Gen. Holland M. Smith, whose point of view was that of the Marines, was emphatic on that score:

> Yet my answer to the question, tremendous as was the price of victory, is definitely in the affirmative. In fighting a war to win, you cannot evaluate the attainment of an objective in terms of lives, or money, or material lost. I said "Yes" to this question before we laid plans to take Iwo Jima, and I say "Yes" today.[82]

The cost in human lives was heavy. U.S. losses, excluding Navy personnel, were estimated by USSBS at 4,590 killed, 301 missing, and 15,954 wounded, a total of 20,845. In return, the Americans killed an estimated 21,304 Japanese and captured 212.[83] In a war of attrition this would have been an acceptable exchange, but the battle of Iwo Jima was for a small piece of valuable real estate, not primarily to inflict casualties upon the enemy.

Initial planning had stressed Iwo's value as a base for VLR fighter escorts, and B-29 losses at the time of the battle for the island were serious enough to make these escorts seem necessary. Yet by late spring and summer Japanese air strength in the home islands deteriorated so rapidly that bomber formations again went out unescorted; the unexpectedly frequent use of the B-29's in night missions also detracted from the importance of escorts. In all, the fighters were to fly some 1,700 escort sorties, a figure much lower, one would suppose, than had been anticipated. Nor did the B-29's make much use of Iwo's fields as a staging point where B-29's could top off their fuel loads.[84]

The chief use made of the island was as an intermediate landing point, particularly for B-29's in distress, and in this respect there can

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be no doubt as to the great value of Iwo Jima. By the end of the war about 2,400 Superforts had made emergency landings on its runways;[85] with 11-man crews, this involved some 25,000 airmen. Estimates of AAF lives saved because of Iwo's strips have run as high as 20,000,[86] but this seems a gross exaggeration. Certainly not all the 2,400 planes would have gone down at sea—indeed, possession of Iwo offered a constant temptation for B-29 crews in difficulty to use the midway point when there was a reasonable chance of making the home base. Furthermore, about half of the B-29 crewmen who went down at sea were rescued.* Perhaps the estimate cited by Admiral King that the lives saved "exceeded lives lost in the capture of the island itself" is the most accurate and just one.[87]

Possession of Iwo added flexibility to VHB operations. Missions could be dispatched during periods of uncertain weather in the Marianas with the understanding that returning aircraft would be diverted to Iwo if adverse landing conditions developed at their home bases. The B-29's which had once avoided Iwo were now routed over the island, which served conveniently as an assembly and navigational checkpoint, making it possible to schedule missions with a take-off after midnight and a daylight return and landing. After this pattern was adopted, the rate of open-sea landings declined sharply and the rate of successful ditchings increased. The gains in combat effectiveness which resulted from improved morale cannot be measured but they were considerable. Changes in the tactical situation perhaps lessened the importance of Iwo Jima, but in sum XXI Bomber Command had great reason to be grateful for the sacrifice the Marines had made in seizing the island.

Air-Sea Rescue

Although Iwo Jima's strips saved many an airman's life, they did not eliminate the need for a comprehensive air-sea rescue (ASR) program for B-29's operating out of the Marianas. Such a program had been begun at the time of the first training mission, and with subsequent improvements, some made possible by the capture of Iwo, it continued to function throughout the rest of the war. Like Iwo's emergency landing fields, the elaborate precautions for search and rescue at sea paid off in two ways: in lives actually saved and in improved morale, which meant greater combat efficiency.

Three years of war in the Pacific provided a rich background of

* See below, pp. 606–7.

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experience in rescuing airmen from the sea, yet although the problems involved in connection with VLR missions differed in degree rather than in nature from those encountered before, the differences were significant enough to exaggerate the difficulties inherent in this complex service. Something had been learned from XX Bomber Command's missions over the Indian Ocean where the chief responsibility for rescue lay with SEAC, a combined command, but those missions had not been numerous nor were they, in general, so dangerous. For the missions out of Chengtu against Kyushu and Formosa, CINCPOA submarines had patrolled the adjacent waters but had never made a rescue.[88]

For XXI Bomber Command, the most obvious factor to consider was distance. It was roughly 1,400 miles between the Marianas and Honshu, not an excessive range for the B-29 but still a long haul over water with no islands along the route or on either side save for the enemy-held Nampo Shoto. Even when Iwo's capture provided a midway haven the distances were formidable enough so that only those B-29's which could reach the island in shape to make a power landing benefited from its strips. To increase bomb loads, operational officers kept fuel loads at a minimum and planes injured in combat or suffering from mechanical malfunctions or thrown off course by navigational errors faced the long return trip with insufficient gas reserves. Many were lost without leaving a trace; others were seen to crash, sometimes after crewmen had bailed out, sometimes without any sign of parachutes. Other B-29's in trouble were deliberately put down at sea, usually in a power landing, a process known to airmen as "ditching." It was a prime concern of XXI Bomber Command to rescue as many of these stranded crewmen as possible.

This was not easy. Even after Iwo's capture the sea northward was infested with Japanese ships and planes. The ocean belied its name, Pacific. The route to Japan lay in the trade-wind belt where high winds were common and typhoons were occasional; heavy clouds and rain squalls reduced visibility, sometimes to zero; and pounding seas with whitecaps made search for a life raft a grim game of blindman's buff and rescue a hazardous task. Even the job of ditching was more difficult than in the less turbulent waters of the Indian Ocean or Bay of Bengal where on occasion B-29's had floated for hours after being set down.* And the distances which made ditchings frequent made search more difficult than in operations of normal range

* See above, p. 97.

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by increasing the area to be conned and reducing the time available for orbiting the critical location. These difficulties were appreciated in a general way, if not in detail, from the outset, and efforts were made to modify existing procedures to meet the needs of VHB missions.[89] But XXI Bomber Command was pioneering, and in air-sea rescue, as in other phases of operations, there was a period of adjustment in which performance was less than satisfactory.

In accordance with declared policy for the Twentieth Air Force, the Joint Chiefs made the CINCPOA responsible for air-sea rescue; he delegated the responsibility to ComForwardArea (Admiral Hoover) who set up an Air-Sea Rescue Task Group under Capt. H. R. Horney with task units at Saipan, Guam, Peleliu, Ulithi, and later Iwo Jima. Surface vessels were under the control of the Marianas–Iwo Jima Surface Patrol Group in the north and the Carolines group in the south. Lifeguard submarines were controlled by ComSubPac. Neither ships nor submarines were assigned permanently but were made available on request from Captain Horney as B-29 missions were dispatched.[90] Though XXI Bomber Command had no responsibility, it had a most lively interest in rescue operations. In its headquarters at Guam an air-sea rescue section was established to maintain close liaison with Horney's group, and after 15 December the VHB wings kept full-time liaison officers with Task Unit 94.4.2 in the Marianas.[91]

Negotiations between ComSubPac and XXI Bomber Command had preceded the beginning of training missions and the service began with the 73d Bombardment Wing's shakedown strikes; the first rescue came on 8 November when a B-29 returning from Iwo ditched and part of the crew was saved.[92] The facilities made available for the first Tokyo mission included 5 lifeguard submarines on station north of Iwo Jima; 1 destroyer south of that island and another in the area 100 to 150 miles north of Saipan; 1 PBM on station just south of Iwo; and 3 PBM's and 6 PB2Y's standing by at Saipan. One B-29, short of fuel, ditched on the return trip and its whole crew was picked up by a destroyer.[93] The record on succeeding missions was less reassuring. A third plane ditched on the Tokyo strike of 27 November and all on board were lost. Ditchings numbered sixteen in December, fifteen in January, fourteen in February. Of the forty-eight planes (B-29's and F-13's) lost in this fashion before 1 March, eight had gone down during miscellaneous missions (training, photo reconnaissance, weather, and search) and forty during strikes against

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Empire targets. There were twenty such strikes during the period and on only three were there no ditchings; the average of two planes down per combat strike was costly. The worst day was 10 February when eight B-29's on the Ota mission put down at sea. In November, December, and February a little more than a third of the crewmen who ditched were rescued, but in January the figure was only 12.6 per cent.[94]

Concerning those losses, the XXI Bomber Command was worried. So was Arnold. Shortly before relieving Hansell, Arnold wrote him somewhat querulously:

> I am also aware of the fact that some of these airplanes naturally must be ditched, but it seems on every raid there are three or four airplanes that go down, on the return trip, with no definite cause being given. It would seem to me that as the losses from this cause are constant and if added up, will present a large number, we should find the causes and determine what we can do to prevent them. . . . In my opinion, the B-29 cannot be treated in the same way we treat a fighter, a medium bomber, or even a flying fortress. We must consider the B-29 more in terms of a naval vessel, and we do not lose naval vessels in threes and fours without a very thorough analysis of the causes and what preventive measures may be taken to avoid losses in the future.[95]

Since Hansell was on his way out, there was little more that he could do, but in his valedictory letter of 14 January, he challenged Arnold's analogy: "The simile between the B-29 and the naval vessel is open to question. . . . If the Navy committed its fleet or even all of its destroyers . . . five or six times a month, their losses would be prohibitive."[96] Hansell *had* analyzed the losses and *had* begun remedial action which was to be pushed by LeMay when the latter took over the command. Hansell blamed part of the trouble on the complex command system in the air-sea rescue organization, with its divided responsibility for locating survivors and picking them up. This he hoped would be corrected by the practice already instituted of establishing in each wing a filter room for processing distress messages from its own aircraft; the signals were forwarded to a central control room operated by the Navy at Saipan, from which searches were directed.

There were two approaches to the problem of losses at sea: to reduce the number of planes going down and to increase the rate of rescues of crews that survived the ditching. For losses that occurred because of battle damage there could be no positive remedy, though Iwo's capture was expected to help by providing fighter escorts and emergency landing strips. Other B-29's went down because of me-

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chanical failures and the rate here, as in the excessive number of aborts, could be reduced by better maintenance and more rigid inspection. Hansell had initiated improvements in these respects which were continued under LeMay's regime, and an intensive training program gave engineers and pilots a better understanding of flight control. More important, perhaps, was Hansell's device of lightening the B-29 by stripping it of 1,900 pounds basic weight and removing 1 bomb-bay tank weighing 4,100 pounds when full. The total gross weight reduction of 6,000 pounds materially decreased power requirements, which in turn cut down on the frequency of engine malfunctions. On the first mission after this surgery, 19 January, there were no losses out of eighty bombers airborne and on the next, 23 January, there was but one ditching out of seventy-three sorties.[97] Although this kind of luck could not hold in the face of the increasing tempo of operations, the rate of ditchings in terms of total sorties was never again to equal that set in January.

As for improving the rate of rescues, that was partly a matter of getting more and better equipment, partly of making better use of what was available. In the latter respects, the B-29 crews had much to learn. The original manuals on B-29 ditching procedures had been improved on the basis of experience in CBI, but Arnold complained on 23 January that narrative reports of ditchings indicated that crews were not assuming proper ditching positions and that emergency equipment was being improperly maintained and used.[98] LeMay promptly called for more rigid inspections and intensified training for crews.[99] The indoctrination program in the wings included lectures and practice in air-sea rescue procedures, and information as to available facilities was given at each pre-mission briefing. But later inspections showed that equipment was still being misused. To cite a typical example, many planes were short of Mae West flashlights, invaluable in night ditchings, because crewmen borrowed them for use in their quarters and forgot to bring them along on combat missions.[100] And the human factor in ditching and rescue was hard to predict or control. Those who have had to teach "ground school" courses to flyers will understand how difficult it is to impress them with the importance of any subject not immediately connected with an airplane in flight, and such lessons as were learned were often forgotten or disregarded in the traumatic experience of a rugged landing in an unfriendly ocean, especially at night. In the first ditching, that of 8 November,

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only two crewmen escaped. When one of these, Sgt. Stanley J. Woch, was asked if there was anything wrong with the ditching procedure, he replied: "No, I cannot think of anything that was wrong; if the ditching had been like the ditchings in the book, and the plane behaved the way it should, everything would have been all right."[101]

Even with the most skilful piloting there was a terrific shock when a 65-ton plane hit the water at a speed of more than 100 miles per hour, so that accidents frequently occurred which were not "in the book" and which no amount of training could forestall. An example chosen at random from a later period when air-sea rescue procedure was at its peak of efficiency will illustrate this point. In the early morning hours of 13 July, a B-29 from the veteran 58th Bombardment Wing was returning from a night incendiary strike at Utsunomiya. About two and one-half hours south of Iwo Jima the No. 1 engine went out, and then the fuel transfer system failed. This left too little gas to make it to Tinian on three engines, and when the crew sighted a convoy, the pilot, Lt. Irwin A. Stavin, decided to ditch. There was ample time and the crew made full preparations. Stavin contacted a Dumbo by radio and the Catalina was on hand when the B-29 hit the water in a perfectly controlled landing. Although the plane broke in two and sank in less than two minutes, all eleven of the crew got out; a sub chaser and an LSM from the convoy picked up the survivors within thirty minutes. Yet under these very favorable circumstances, the left gunner and the tail gunner were lost, having failed for some reason to reach the life rafts.[102]

Here the pilot had capitalized on the fortuitous meeting with the convoy, but in all probability the Dumbo would have been able to bring in some other rescue craft. It was locating survivors rather than picking them up that usually proved the more difficult task. The 48 B-29's known to have ditched before 1 March would have carried, with normal crews, some 528 airmen; during that time air-sea rescue had spotted 164 survivors and had picked up every one of them.[103] Most of the pick-ups had been made by surface vessels. During the early weeks of operations lifeguard submarines had made radio contacts with several downed crews but had never reached them. On 19 December the *Spearfish* rescued seven crewmen in a fine exhibition of teamwork on both sides, but it was not until 31 March that another underwater craft made a rescue.[104] Some survivors broadcast their position in the clear and this made the submarines, vulnerable to enemy

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attack, apprehensive of approaching; other B-29 crews, especially those going down off Honshu, simply refused to use either radio or flares for fear of being captured by the Japanese.[105] Submariners blamed the flyers for taking chances on getting a damaged plane home rather than putting down near a submarine, "an uncertain factor to the Superfort boys."[106] This was not wholly because of lack of confidence; after all, pilots were supposed to bring their planes home if possible, or to Iwo. One pilot is quoted as saying facetiously, after being briefed on rescue procedures, "I don't intend to ditch—Uncle Sam wouldn't like it."[107] Although some airmen remained skeptical of the utility of the submarines, with experience and an increase in the number of lifeguard subs, the record was improved: a third rescue was effected on 27 April and in the late spring pick-ups became more frequent.[108] There was similarly an increase in the number of surface vessels on station and on call.

But the crux of the rescue problem lay in the effectiveness of the air search. Cooperation between Navy and AAF personnel in air-sea rescue units was good, but at the end of February, when a total of 129 Dumbo sorties had been dispatched, there was an impression in LeMay's headquarters that the "Navy effort per B-29 ditched seems ridiculously low."[109] In part this was for want of enough planes, in part because of the reliance upon seaplanes: the Dumbos—PBY's and PBM's—had achieved an honorable record but were not ideally suited to the task at hand. One virtue, the ability to land on the water and make their own rescue after a successful search, was often negated by the rough seas. They lacked the range to patrol the whole area of B-29 operations—even after an air-sea rescue unit was set up at Iwo the areas beyond 30° North and 139° East were patrolled only by Superdumbos until late in June.[110] The seaplanes were difficult to get up in an emergency and their lack of firepower and armor made them vulnerable to enemy interception. Yet in spite of pleas from XXI Bomber Command for land-based bombers for patrol, the first appreciable aid from the AAF came with the assignment of the 4th Emergency Rescue Squadron equipped with OA-10A's, the AAF version of the Catalina. The first echelon arrived on 23 March and by early April a dozen of the planes had come, of which three were sent to Peleliu. Late in April, much to the command's satisfaction, rescue equipment was reinforced by eight B-17's specially equipped with droppable motorboats.[111] The arrival at Iwo Jima of the escort fighters added to

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the responsibilities of the rescue unit there. Yet though the P-51D or P-47N was helpless when its single engine conked out, either plane had a respectable radius of action and was quick to get away on an emergency call; the large number of fighters available made them useful in a spot search.

But only the B-29 had the endurance to hunt for long hours off the coast of Honshu where planes badly hurt in battle were apt to be lost. From the earliest raids Superfortresses in good condition were accustomed to stick by a wounded plane and to stand by as long as possible when it went down. This informal aid, called sometimes from its likeness to mass swimming practice the "buddy system," was extended when VHB wing commanders were given permission to conduct independent searches with combat B-29's. When LeMay assumed command, the shortage of Superforts had been eased somewhat with the arrival of units of the 313th Bombardment Wing, and from 22 January two of the giant bombers (or, rarely, F-13's) were on station for each mission and many others were dispatched on special searches. With their great stamina—they averaged more than fourteen hours per search—the B-29's proved so valuable that a special model, the Superdumbo, was developed for search and rescue work. This model carried additional radio personnel and equipment and much in the way of gear to be dropped to airmen in the water—pneumatic rafts, provisions, survival kits, and radios. The modified B-29's, like other rescue planes, worked best when teamed with surface vessels or submarines, and it became standard practice to have two of the Superdumbos orbiting over each of the northernmost submarines by day and one by night, with four Superdumbos on ground alert at Iwo Jima. So heavy was the armament of these converted bombers that they were able not only to protect themselves but on occasion to drive off or destroy enemy planes or surface craft attempting to attack the lifeguard submarines.[112]

In spite of the continual expansion of air-sea rescue facilities, those most intimately concerned were never wholly satisfied with what they had. Yet toward the end of the war the rescue task group was able to cover the routes to Japan so thoroughly that there was no point on the briefed return track that could not be reached by rescue aircraft within thirty minutes and by destroyers or submarines within three hours. When the last B-29 mission was staged on 14 August, there were on station fourteen submarines, twenty-one Navy sea-

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planes (PBY's and PB4Y's), nine Superdumbos, and five surface vessels. Besides these, surface craft were stationed off the ends of all runways, Navy patrol planes circled the waters nearby, and other rescue aircraft were on ground alert at Saipan and Iwo Jima. All told, some 2,400 men were on air-sea rescue duty, about 25 per cent of the total number engaged in the combat mission.[113]

With the growth of facilities there came also efforts to increase the efficiency of operations. Conferences between air and submarine officers were held at Guam in June to standardize communications systems, and eventually all planes, ships, and command posts concerned were put on a common radio frequency. Air search officers were taken on practice cruises in the underwater craft and submarine officers for flights in Superdumbos. B-29 crews were sent to ComSubPac's rest camp on Guam for indoctrination and a submarine rescue lecture team toured the VHB fields.[114] The effectiveness of these efforts is reflected in the following table of air-sea rescue statistics:[115]

		Crew Members Known Down at Sea				*Number*	*Per Cent*
Month		*Ditched*	*Crashed*	*Parachuted*	*Total*	*Rescued*	*Rescued*
Nov.	1944	36	0	0	36	14	39
Dec.		157	22	0	179	63	35
Jan.	1945	122	33	0	155	20	13
Feb.		102	34	0	136	65	48
Mar.		107	0	0	107	79	74
Apr.		57	43	67	167	55	33
May		112	33	85	230	183	80
June		12	55	113	180	102	57
July		22	22	76	120	73	61
TOTAL		727	242	341	1,310	654	50

From February on the monthly percentage of men rescued from those known to have gone down at sea shows a decided, if not a steady, improvement: only in April was there a serious break in the general trend. The figures become especially significant when projected against the spectacular increase in the rate of operations: thus the total known losses at sea in January were 125 men in 649 sorties, but in July were only 47 in 6,536 sorties.[116]

These statistics were of assistance to air-sea rescue officers as they sought to improve their service. The figures serve also to point up a fundamental difference between the American and the Japanese philosophy of war. The Japanese made but small provision for rescue service, while the Americans in the last B-29 mission, as was shown above, had one man at rescue work for each three in combat planes.

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In addition to reflecting the concern for the individual characteristic of a democracy, this reflects also a hard-headed concern for a highly skilled combat team which had cost much in time and effort to produce: air-sea rescue paid off in protecting this investment as well as in humanitarian values. As the war moved on, Japanese flyers got progressively worse and U.S. flyers progressively better, and the attitude of each nation toward air-sea rescue was a contributing factor.

The statistics do not show, unhappily, the human side of the story—the long hours of frustrating search in the patrol planes, or the long hours of anxious waiting in the rubber rafts, or the patient and hazardous vigil in the submarines. No column of percentages can do justice to the skill and daring of the men who made the pick-ups off the very shores of Japan and from the Inland Sea itself, but the record is there to read in the logbooks of the submarines and in the circumstantial interrogation reports of survivors. There is no war literature that assays more richly in tales of derring-do.[117]

Nor do the statistics give any hint of the effect of air-sea rescue services on the individual airman. Stated in simple pragmatic terms, the figures might have shown the flyer that if he went down at sea in any fashion he had about a fifty-fifty chance of survival. If he ditched his chances were probably better, if he bailed out or crashed they were poorer. In any case his prospects were happier than if he parachuted over Japan. If he were a "percentage player" or a fatalist, the flyer might take comfort from the figures; some remained skeptical. On the eve of the Nagasaki atom bomb mission on 9 August, when rescue precautions were at their peak, Navy officers at the briefing stressed the ease and frequency of air-sea rescues. A member of the bombardment crew, Sgt. Abe Spitzer, comforted a dubious comrade: "It's like a Gallup poll; nobody's ever met anybody who was interviewed in a Gallup poll. Same thing; we never heard of anybody who's been rescued."[118] But other crewmen had heard and there is no doubt that air-sea rescue took away something of the dread of the long return flight.

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CHAPTER 20

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URBAN AREA ATTACKS

ON 6 March 1945 General LeMay summed up the record of XXI Bomber Command in a disparaging remark to his public relations officer, Lt. Col. St. Clair McKelway: "This outfit has been getting a lot of publicity without having really accomplished a hell of a lot in bombing results."[1] This was no reflection on McKelway's office. From the Yawata mission of 15 June 1944 the Twentieth Air Force had maintained a policy of "factual reporting" of B-29 raids, and in the CBI and the Marianas, commanders had adhered loyally to that policy. In XXI Bomber Command headquarters there was a desire to plan releases in such fashion that it would not appear "that the B-29's were seeking to hog all the credit," and there was strong resentment that rewrite men at home were inflating the conservative reports sent out from the islands.[2] But of the lack of significant results there could be no doubt. A day earlier the B-29's had returned from their eighth unsuccessful mission against Nakajima's Musashino plant and the failure to knock out that top-priority target was symptomatic of the entire bomber campaign.

Within a fortnight the picture was to change with a dramatic abruptness rarely experienced in strategic bombardment, where results are more often cumulative than catastrophic. The sudden improvement in bombing came with a change in tactics which was in its way as newsworthy as was the destruction wrought. For the change in tactics LeMay was responsible and its success was to mark him as one of the very greatest of operational air commanders of the war, but like most tactical revolutions this one must be viewed in the context of current ideas and events.

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The Case for Fire Bombing

The B-29 had been designed largely at the instigation of those theorists in the AAF—sometimes called the "bomber radicals"—who were dedicated to the principles of daylight precision bombardment. When the plane was first committed to combat in June 1944, those principles had been under test in Europe for nearly two years, and the concurrent experiences of the RAF with night area bombing could be used as a control in the experiment. The results had not been wholly conclusive: there was no disposition among top AAF leaders to change from precision doctrines, but heavy losses to the Luftwaffe had shown the fallacy of the early belief that unescorted formations of bombers could regularly attack enemy targets. But since Japanese defenses were considered weaker than the German and since the B-29 with its great speed, firepower, and ceiling was superior to the B-17's and B-24's used in Europe, most of the early planning for the strategic bombardment of Japan had been based on the classic AAF doctrines. Hansell, who had been one of the most ardent exponents of those doctrines while working in Arnold's headquarters and after coming out to the Marianas, attributed the failure of the early strikes against Japan to operational difficulties rather than to any flaw in the concept.[3] His reluctance to change his tactics, it has been suggested above,* may have been an important reason for his relief, for there had always been, both in Washington and in the theaters, men who advocated other tactics, and their influence had grown after Hansell's departure. The argument for deviation from the doctrine of daylight precision bombardment hinged on three points: the cost of unescorted daylight missions, the vulnerability of Japanese cities to incendiary attacks, and the inconsiderable effects of pinpoint bombing with high explosives.

While XX Bomber Command was in training for MATTERHORN, several officers with wide bombardment experience—including Kenney, Fred Anderson, and LeMay—had expressed a preference for using the B-29 at night.[4] The 58th Wing had received relatively little training in night tactics but ran some of its missions—especially when directed against Empire targets—by dark. The 73d, on the contrary, had trained a few months later when, according to Hansell, "radar bombing at night was the principal tactical concep-

* See above, p. 568.

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tion," and it was this indoctrination he blamed for the wing's poor showing in day missions.[5] Although combat losses in operations from the Marianas had not been prohibitive, they had increased during January at a rate that made reconsideration of night tactics desirable.

There was a popular belief in the United States that Japanese cities would be highly susceptible to incendiary attacks. When serious study of strategic air targets in Japan began in March 1943,[6] there were many who agreed with this view. Tests conducted at Eglin Field and Dugway Proving Ground on model urban areas of typical Japanese construction seemed to add scientific confirmation to a judgment based on common sense. An air intelligence study completed on 15 October 1943 concluded that Japanese cities would prove much more vulnerable to fire bombing than had comparable German cities, because of more inflammable residential construction and greater congestion. Japanese military and industrial objectives were frequently surrounded by crowded residential sections and were hence exposed to sweeping conflagrations—indeed, much of the manufacturing process was carried on in homes and small "shadow" factories. Japanese industry, unlike German, was concentrated in a few cities, and it was estimated that the industrial areas of the twenty leading cities could be burned out with about 1,700 tons of M69 bombs—a 6-pound oil incendiary that was highly effective against light construction.[7] This calculation referred to bombs actually on target, not to the total weight dropped, but even so AC/AS, OC&R, considered this weight much too light.[8] Since subsequent efforts to revise the estimate produced no generally acceptable figure and since both operational and logistical agencies needed a realistic planning factor, it was especially important that test fire-bombing raids be run in the theater.

Such raids had been slow to materialize. The COA report of 11 November 1943, which guided the operational planning for MATTERHORN, stressed a long-range attritional campaign against steel and made no immediate provision for incendiary attacks.[9] In spite of occasional prodding from Washington, XX Bomber Command did little in the way of fire bombing, so that when the COA rendered its second report on 10 October 1944, it had few combat data on which to rely. Following the report of a subcommittee which had recently completed a theoretical study on the economic effects of large-scale incendiary attacks on urban areas at Tokyo, Yokohama, Kawasaki, Nagoya, Kobe, and Osaka, the COA recommended such attacks on

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those cities—but only after the raids could be "delivered in force and completed within a brief period." In the meanwhile, they recommended that a test incendiary raid be run against some smaller city.[10]

The Joint Target Group indorsed this view, and the report of 10 October, with its emphasis on precision attacks with high-explosive bombs against the aircraft industry, became the basis of the target directives for XXI Bomber Command.[11] Some officers on Arnold's staff—including Col. Cecil E. Combs (Norstad's deputy for operations), Col. J. T. Posey, Maj. Philip G. Bower, and several of those who had worked on the basic study of 15 October 1943—thought the COA-JTG policy of delaying incendiary attacks overconservative. It made sense to wait until there was force enough to cause a general conflagration in one city but, as Bower suggested, it was "an unwarranted extension of the sound basic policy" to hold off until all cities could be destroyed in successive attacks.[12] Calculating the time when the requisite force would be available was difficult. Col. Guido R. Perera, AAF member of the COA, had on 8 June 1944 made a shrewd guess of March 1945.[13] Bower, using the same planning factors as the JTG, estimated September; he thought the bomb weight suggested by the COA was too heavy and the date much too late for proper phasing. In addition to these theoretical considerations, there was by early 1945 a tactical issue: it was necessary to exploit the Philippine victory and the expected capture of Iwo Jima and to bring those home to the Japanese public; for such purposes, heavy fire raids against the chief cities would be more effective than precision strikes against factories in the suburbs.[14]

How much Arnold was moved by these arguments is uncertain; probably they had less influence than the failure of the precision attacks. In any event, his headquarters became progressively more interested in an all-out incendiary campaign. The results of the test raids against Nagoya (3 January) and Kobe (4 February) were studied in Washington but evoked "long-haired pros and cons" rather than firm conclusions.[15] Nevertheless, Arnold's target directive of 19 February indicated the significant trend: precision attacks on engine factories would still enjoy first priority, but incendiary attacks against the selected urban areas moved into second place ahead of assembly plants, and Nagoya, Osaka, Kawasaki, and Tokyo were designated primary targets under radar conditions. Moreover, a large-scale test raid against Nagoya carried an overriding priority.[16] For tactical rea-

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sons mentioned above,* the test was made at Tokyo on 25 February rather than at Nagoya and was most encouraging. In March, LeMay, with an increased force on hand, was committed to a heavier effort, what with the lagging Iwo campaign and the assault on Okinawa imminent: in a conference at Nimitz' headquarters at Guam on 7 March XXI Bomber Command agreed to begin its pre-Okinawa campaign with maximum strikes against Honshu, L minus 22 to L minus 10 (9/10 March to 21/22 March).[17] Conditions within the theater as well as Washington's insistence urged a wider use of incendiary methods.

Early plans for precision bombing had assumed visual conditions over Japan. Experience had shown that assumption false. Since the attack on Kawasaki-Akashi on 19 January when bombing had been excellent, no mission had found visual weather over target; bombs hitting within a radius of 3,000 feet from the aiming point had varied from 17 per cent (rated "unsatisfactory") to 0 per cent. Weather during the spring months was supposed to be worse and, with existing meteorological facilities, not accurately predictable. Most missions would have to rely on radar, and with the equipment and personnel available, this meant area bombing.[18] For Japanese cities, incendiaries would be more effective in area attacks than high explosives.

The actual tactics to be used were the subject of much study by LeMay and his staff. The results of the Tokyo mission, though encouraging, were far from perfect. Like the other incendiary tests and LeMay's successful fire raid on Hankow on 18 December, this mission had been run at high altitude.† Because of the high winds prevalent over Japan, accuracy under such conditions was difficult to achieve; moreover, the ballistic characteristics of the 500-pound cluster of M69's rendered that bomb grossly inaccurate.[19] A lower bombing altitude would increase accuracy, bomb load, and the life of B-29 engines. It might also increase losses to a prohibitive rate.

There was little in the way of pertinent experience to justify the change in tactics. The XX Bomber Command had done night mining at low altitudes (on one occasion going in under 1,000 feet), had bombed Kuala Lumpur from 10,000 feet by day, and had struck Yawata from as low as 8,000 feet by night.‡ Except for Yawata,

* See above, pp. 572–73.
† See above, pp. 143–44 and 573.
‡ See above, pp. 99, 109, 159, and 162.

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however, those targets were poorly defended, and even Yawata had nothing like the array of antiaircraft guns massed around the great cities of Honshu. Some of LeMay's flak experts thought it would be suicidal to go in over Tokyo or Osaka at 5,000 or 6,000 feet. But LeMay, a veteran of some of the heaviest air battles in ETO, considered Japanese flak much less dangerous than the German. Japanese gun-laying radar was not efficient, and searchlights, though plentiful and annoying, were no substitute for electronic control. In spite of the intense fire put up by heavy AA guns, statistics for the command's missions were not too frightening: only two B-29's were known to have been lost solely to that cause.[20] The element of surprise should give the new tactics an advantage, at least initially.

As for enemy fighters, the chief cause of losses in daylight missions, there was less fear. Current intelligence credited the Japanese with only two units of night fighters in all of the home islands, and with them, as with the AA guns, radar equipment was not considered up to U.S. standards. Actually, LeMay proposed to send his B-29's in without ammunition for their guns.[21] In August 1944, when LeMay was at Arnold's headquarters preparing to go out and relieve Saunders in XX Bomber Command, there had been both in Washington and Kharagpur a strong sentiment in favor of stripping some of the B-29's of armament and using them, along with regularly armed planes, exclusively in night incendiary attacks.[22] LeMay now had to balance the psychological effects of what amounted to disarming his bombers against the very real danger of self-inflicted damage among the B-29's; the added bomb weight that could be carried in lieu of an average load of 8,000 rounds of machine-gun shells would be about 3,200 pounds, an appreciable increment.

In operational respects, there was much in favor of the night missions. Clouds over Japan tended to thin out at night and at the proposed altitudes winds were not too formidable. At night, loran sky waves came in more clearly than in day, making navigation easier. On the return flight, planes would meet an early dawn somewhere about Iwo Jima and it would be easier to land or to ditch damaged planes. Most important of all, the low altitude would allow a very heavy bomb load.[23]

These factors, and others, LeMay studied with his staff and his operational officers. In the end the command decision was his alone, though apparently his wing commanders (O'Donnell, Power, Davies)

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were in accord with his plan. For the all-out effort against Japan in preparation for the Okinawa assault, LeMay was to launch a series of maximum-effort incendiary strikes, delivered from low altitudes. It was a calculated risk and like most such decisions it required great courage on the part of the commander. If losses should prove as heavy as some experts feared, the whole strategic campaign would be crippled and LeMay's career ruined.[24] Instead, the gamble paid off extravagantly.

The Great Fire Raids

LeMay's decision came late. With the first mission set for the night of 9/10 March* (L minus 22 for Okinawa), the field orders were not cut until the 8th. Although operational details would vary significantly from normal practice, there was no time to consult Washington as was so frequently done—Arnold was not even informed of the revolutionary plans until the day before the mission.[25] The decision to attack at night ruled out the command's standard technique of lead-crew bombing. Formation flying at night was not feasible, and with flak rather than enemy fighters the chief danger, a tight formation would be a handicap rather than a source of defensive strength. With planes bombing individually from low altitudes, bomb loads could be sharply increased, to an average of about six tons per plane. Lead squadron B-29's carried 180 x 70-pound M47's, napalm-filled bombs calculated to start "appliance fires," that is, fires requiring attention of motorized fire-fighting equipment. Other planes, bombing on these pathfinders, were loaded with 24 x 500-pound clusters of M69's. Intervalometers were set at 100 feet for the pathfinders, 50 feet for the other planes. The latter setting was supposed to give a minimum density of 25 tons (8,333 M69's) per square mile.[26]

Since the first Empire strike, no mission had attracted such interest or anxiety. Planning had been shrouded in more than customary secrecy. Norstad, who had come out for a conference on the Okinawa operation, arrived at LeMay's headquarters on 8 March and, when he had been briefed, alerted Lt. Col. Hartzell Spence, the Twentieth's public relations officer in Washington, for "what may be an outstanding show."[27] It was to be outstanding in size: 334 B-29's would take off

* Although bombing on night missions usually occurred shortly after midnight, for sake of convenience they will be dated in this chapter by the day of departure.

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with about 2,000 tons of bombs. More important, it was to be a most effective strike.

Planes from the 314th Wing's 19th and 29th Groups took off from North Field on Guam at 1735 on the 9th. Forty minutes later the first planes of the 73d and 313th Wings left for the somewhat shorter trip from Saipan and Tinian. It took two and three-quarters hours to get the whole force airborne.[28] On the way out the B-29's encountered turbulence and heavy cloud, but navigators easily identified landfall, coast IP, and the target area. Weather over target was better than usual, with cloud cover varying from 1/10 to 3/10 and initial visibility of ten miles. The first pathfinders readily located their aiming points and a few minutes after midnight marked them with fires that started briskly from the M47 bombs. The three wings came in low, at altitudes varying from 4,900 to 9,200 feet, and as initial fires spread rapidly before a stiffening wind, the B-29's fanned out, as briefed, to touch off new fires which merged to form great conflagrations.[29]

The area attacked was a rectangle measuring approximately four by three miles. It was densely populated, with an average of 103,000 inhabitants to the square mile (one ward, the Asakusa, averaged 135,000) and a "built-upness," or ratio of roof space to total area, of 40 to 50 per cent, as compared to a normal American residential average of about 10 per cent. The zone bordered the most important industrial section of Tokyo and included a few individually designated strategic targets. Its main importance lay in its home industries and feeder plants; being closely spaced and predominantly of wood-bamboo-plaster construction, these buildings easily kindled and the flames spread with the rapidity of a brush fire in a drought, damaging the fire-resistive factories.[30]

The bombs-away message set the pattern for future reports: "Bombing the target visually. Large fires observed. Flak moderate. Fighter opposition nil." Late formations reported general conflagrations that sent them ranging widely in search of targets, with visibility greatly reduced by smoke and with bomb runs made difficult by turbulence created by intense heat waves. Tail gunners on the trip home could see the glow for 150 miles.[31]

Opposition had been only moderately effective. The Japanese later admitted that they had been caught off base by the change in tactics, being prepared for neither the low-altitude approach nor the heavy

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attack. The several B-29 formations reported flak of varying degrees of intensity and accuracy; automatic-weapons fire was generally too low and heavy AA too high, and the volume fell off sharply as fire or heat overran gun positions. Fighter defense, originally reported as "nil," was weak throughout the three-hour raid. B-29 crewmen reported only seventy-six sightings and forty attacks by enemy planes, usually while the Superforts were caught in searchlight beams. Crewmen thought the interceptors worked without benefit of radar, being guided in solely by the searchlights, an assumption verified by postwar investigation. The fighters did not score, but flak damaged forty-two B-29's and was responsible for the loss of fourteen, including five whose crews were picked up at sea by air-sea rescue units.[32] The loss ratio in terms of sorties was 4.2 per cent as compared with a figure of 3.5 per cent for all B-29 missions and of 5.7 for January. In these moderate losses, as in damage inflicted on the enemy, LeMay's tactics had been justified.[33]

So fierce was the fire that it had almost burned itself out by mid-morning, checked only by wide breaks like the river. Photographs taken on 10 and 11 March indicated that an area of 15.8 square miles had been burned out. This included 18 per cent of the industrial area, 63 per cent of the commercial area, and the heart of the congested residential district. The XXI Bomber Command's intelligence officers struck off their lists twenty-two numbered industrial targets.[34]

In October and November of 1945 a team of experts from USSBS made a thorough on-the-spot study of the effects of the raid. After surveying the physical features of Tokyo, examining the pertinent records, and interviewing officials and common citizens, the team was able to give a more detailed picture of what had happened.[35]

By Japanese standards, less exacting than American, Tokyo's fire-fighting system was exceptionally good, with 8,100 trained firemen and 1,117 pieces of equipment, of which 716 were motorized. Static tanks for use with buckets or hand pumps were scattered throughout the residential districts, and the municipal water system, augmented by canals and reservoirs, was considered adequate for any emergency. In April 1944, in anticipation of air raids, a number of firebreaks were added to those created after 1923, all being articulated with the river and canals. The air-raid warning system was as good as any in Japan, but neither it nor bomb shelters were up to European standards.[36]

The new tactics caught the fire department by surprise just as they

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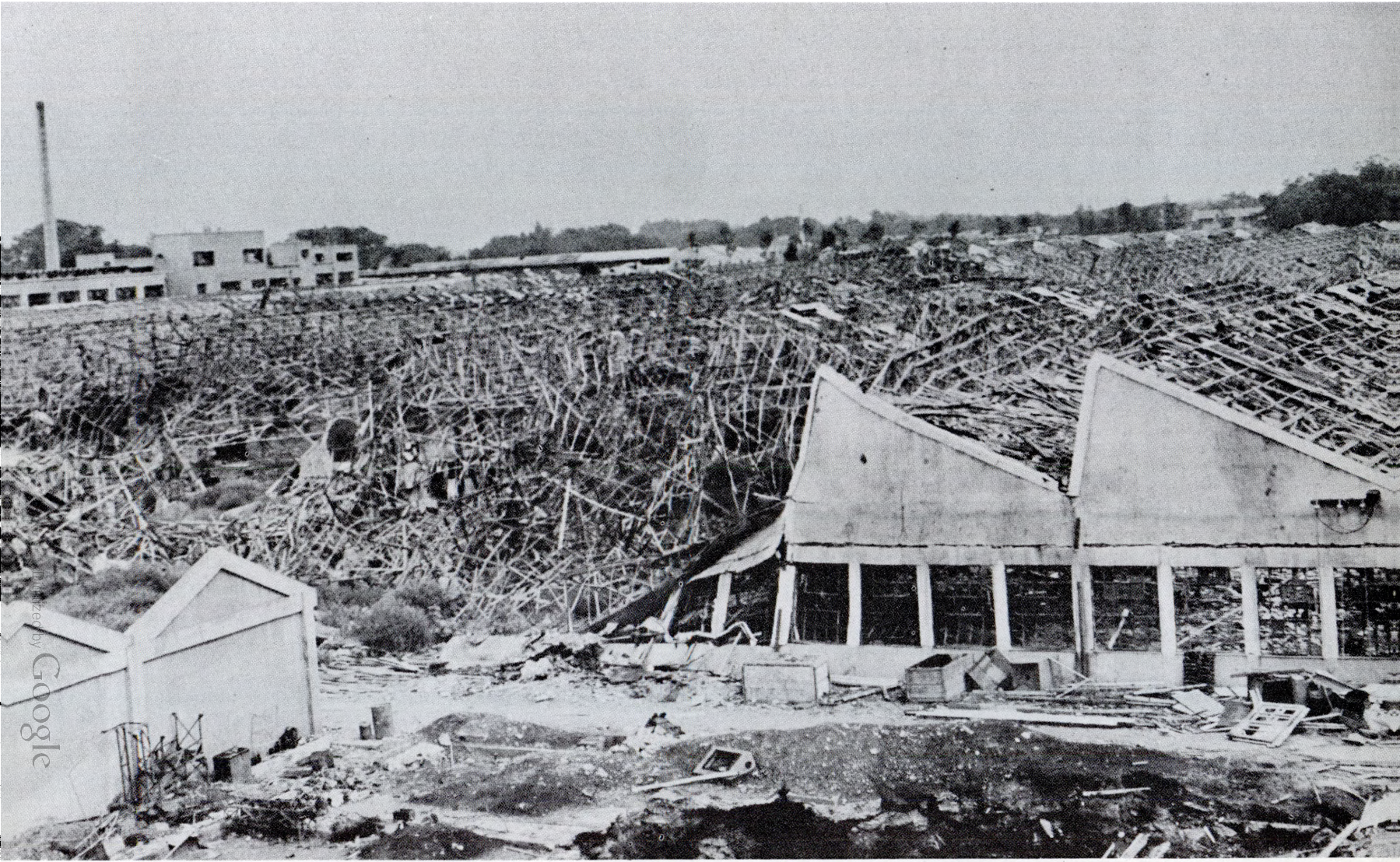
TOKYO: BURNT-OUT AREAS



NAKAJIMA-MUSASHI

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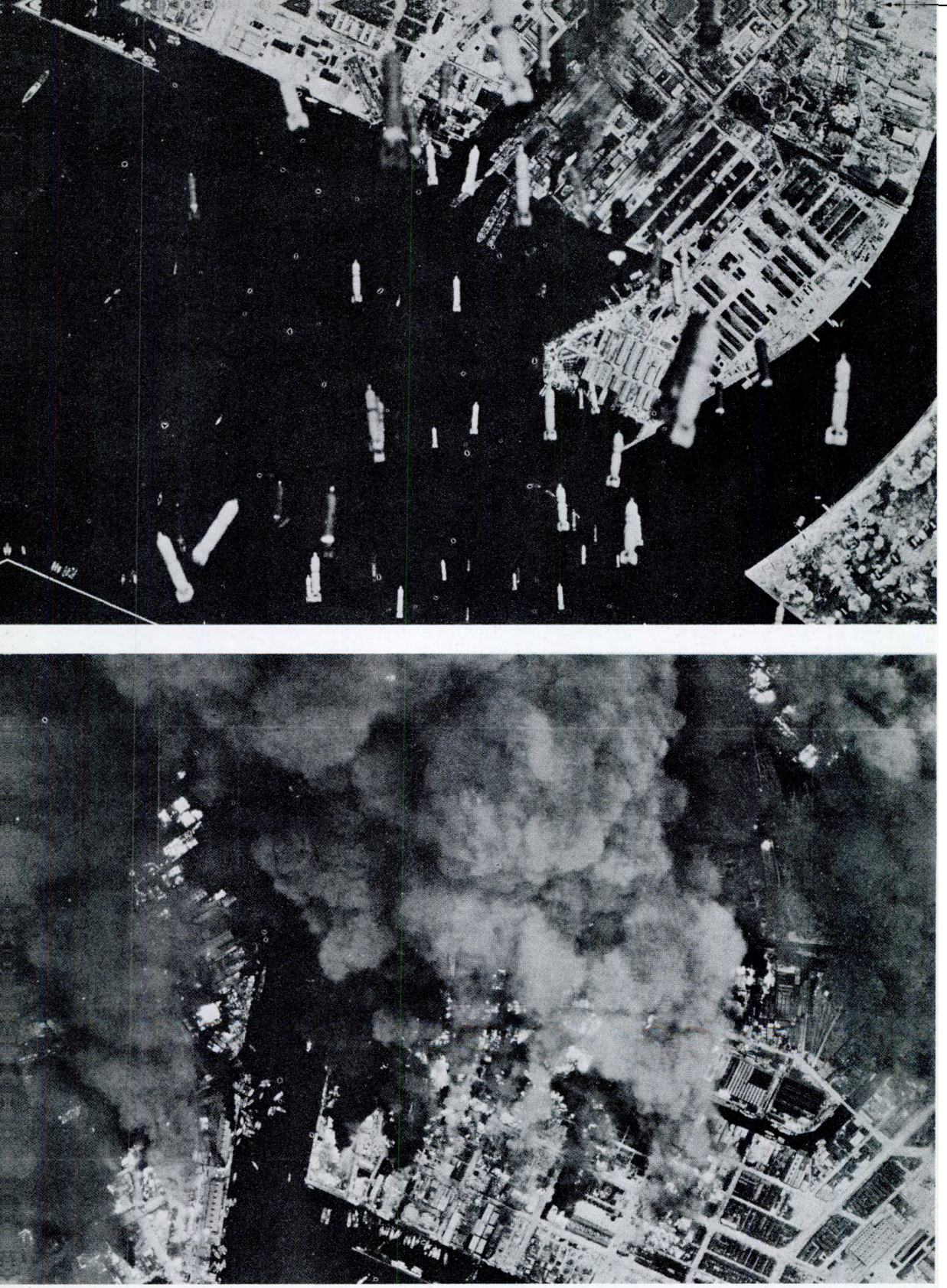

INCENDIARY ATTACK ON OSAKA

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OSAKA: BURNT-OUT AREA

did the military defense. The high concentration of bombs over so wide an area started so many fires that, according to the fire chief, the situation was out of control within thirty minutes. The flames caught and destroyed 95 fire engines, killed 125 firemen. Buildings of light construction were consumed utterly with their contents. There was little rubble left; only an occasional fire-resistant building, scarred by the heat, remained in the razed areas. Police records show that 267,171 buildings were destroyed—about one-fourth of the total in Tokyo—and that 1,008,005 persons were rendered homeless. The official toll of casualties listed 83,793 dead and 40,918 wounded. It was twenty-five days before all the dead had been removed from the ruins. Panic had been partly responsible for the heavy casualties, since persons trapped by spreading fires had tried to dash through the flames. Many found safety in the firebreaks, rivers, and canals, but in some of the smaller canals the water was actually boiling from the intense heat.[37]

Radio Tokyo labeled the raid as "slaughter bombing." One broadcast reported that "the sea of flames which enclosed the residential and commercial sections of Tokyo was reminiscent of the holocaust of Rome, caused by the Emperor Nero."[38] It was good propaganda to picture LeMay as a modern Nero (though he smoked a cigar instead of fiddling while sweating out the mission), and there are passages in Tacitus' famous account of the disaster of 64 A.D. that might have been applied to that of 10 March. But the physical destruction and loss of life at Tokyo exceeded that at Rome (where ten out of fourteen wards of a much smaller city were consumed) or that of any of the great conflagrations of the western world—London, 1666 (436 acres, 13,200 buildings); Moscow, 1812 (38,000 buildings); Chicago, 1871 (2,124 acres, 17,450 buildings); San Francisco, 1906 (4 square miles, 21,188 buildings).[39] Only Japan itself, with the earthquake and fire of 1923 at Tokyo and Yokohama, had suffered so terrible a disaster. No other air attack of the war, either in Japan or Europe, was so destructive of life and property.

The effect on Japanese morale was profound.* An official of the Home Affairs Ministry later reported:

> People were unable to escape. They were found later piled upon the bridges, roads, and in the canals, 80,000 dead and twice that many injured. We were instructed to report on actual conditions. Most of us were unable to do this because of horrifying conditions beyond imagination.[40]

* See below, pp. 754–55.

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While Tokyo searched for its dead, the attack turned against other cities.

On the afternoon of 11 March, less than twenty-nine hours after the last plane had returned from Tokyo, a force of 313 B-29's began taking off for Nagoya, Japan's third largest city and hub of her aircraft industry. The XXI Bomber Command had visited Nagoya in six precision attacks and one test incendiary raid without significant results; this time the command would try to burn out the vital central and industrial core of the city in tactics similar to those used at Tokyo.[41]

The pathfinder planes again were loaded with M47 incendiaries. Had the supply been sufficient, these bombs would have been used exclusively, but there were not enough at hand; field orders called for the use of any incendiaries available in M69 clusters. Each plane carried 200 rounds of .50-caliber ammunition for the tail guns. The B-29's had done well enough without ammunition over Tokyo, but eventually the enemy would discover that the planes were unarmed; moreover, some group commanders thought the tail gunners might knock out a few searchlights.[42] The planes got off between 1710 and 1951. One ditched soon after take-off and nineteen others aborted. The 285 that reached Nagoya went in at altitudes from 5,100 to 8,500 feet and unloaded 1,790 tons, 125 more than had been dumped on Tokyo. The target area was a triangular wedge of the city with a built-up ratio approaching 40 per cent and a population of about 70,000 to the square mile. The aiming points were spaced to avoid blacking out the target for late arrivals and the target run was up wind. The 314th Wing was on target but the 313th and 73d dropped short. Many fires were started—394 separate fire areas were later identified—and some of these spread until stopped by firebreaks. Next morning a submarine 150 miles offshore reported its visibility cut to one mile by wood smoke.[43]

But there was no such general holocaust as had gutted Tokyo. Post-strike photos showed only 2.05 square miles destroyed, and this total was made up of many burnt spots scattered through the city. Eighteen numbered industrial targets (i.e., plants given a special designation in the target folders) were damaged or destroyed, but the aircraft plants were not wiped out. Most seriously hurt of this type of factory was Aichi's Eitoku plant, but the decline in production thereafter was negligible—from 110 planes in February to 106 in March.[44]

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That success was less spectacular than at Tokyo was due in part to circumstances over which XXI Bomber Command had no control. There was little wind to fan the fires started. Nagoya had an adequate water supply, well-spaced firebreaks, and an efficient fire department which adopted excellent tactics for the occasion.[45] But there were also errors in planning that had resulted from misinterpretation of the huge success at Tokyo. For the Tokyo raid, intervalometers on all B-29's except the pathfinders had been set to loose incendiary clusters at intervals of fifty feet. The stories of returning crews regarding the rapid spread of the fires created the false impression that bombs had been wasted by dropping them too close together. For Nagoya the setting was for intervals of 100 feet, which gave a density pattern too thin for the purpose desired. The method of attack, copied from Tokyo, also proved inefficient. The Superforts went over in two waves with bombardiers briefed to place their bombs visually in the vicinity of the aiming points so as to cover the entire area. Only a few planes made a controlled run over the target, and the attempt to scatter the bombs by snap judgment resulted in too wide a dispersal. There was no general conflagration.[46]

The mission cost little in the way of losses. The plane that ditched just after take-off was the only one destroyed. Twenty others were damaged, eighteen by flak and two by fighters. It was becoming clear, as LeMay had anticipated, that the Japanese had no successful tactics for night interception.[47]

For the third mission, LeMay had designated Osaka, not as yet hit by a major air strike. Osaka, situated on Osaka Bay, the eastern limit of the Inland Sea, was Japan's second city in size and in industrial production. Its harbor facilities and excellent rail and highway connections made Osaka an important transportation center. It produced about one-tenth of Japan's wartime total of ships, one-seventh of her electrical equipment, one-third of her machinery and machine tools. The Osaka army arsenal furnished 20 per cent of the army's ordnance requirements. No airplanes were assembled at Osaka, but nearly a fourth of its half-million workers were engaged in the manufacture of parts and components for aircraft and engines. Osaka was also a great commercial city and an important administrative center. Because of conscription and the mushrooming of war industrial plants in the suburbs, the population of the city proper had shrunk from 3,254,380 in 1940 to an estimated 2,142,480 in February 1945. This

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shift had reduced the density of population (to 81,000 per square mile for the central commercial section and adjacent residential-industrial districts) without greatly affecting the built-upness. The scene of many earlier disasters, Osaka had cut a number of firebreaks through congested areas to add to the protection given by its numerous canals and had built many modern fire-resistive buildings, but its crowded districts of highly inflammable houses offered an ideal incendiary target.[48]

The Osaka strike was scheduled before final results of the Nagoya mission had been evaluated. Reports from observers were sufficient, however, to raise doubts as to the correctness of the tactics followed, and operational planners tried to reproduce the pattern which had worked so well at Tokyo. The intervalometer setting was changed back to fifty feet and crews were warned to achieve a higher concentration in the target area. No specific method was prescribed although crews were briefed to check position carefully before releasing the bombs.[49]

Thanks to heroic efforts on the part of maintenance crews, the command was able to put up 301 B-29's in a late afternoon take-off on 13 March. The planes carried the same 6-ton bomb load, but the low wing was given .50-caliber ammunition for lower forward and aft turrets as well as for the tail guns. When the force of 274 planes that got over Osaka found an 8/10 cloud cover, it had to resort to radar bombing. This proved an advantage rather than a handicap. Unable to sow their bombs by sighting visually on pathfinder fires, bombardiers were forced to drop after a controlled run, releasing on an offset aiming point. With this technique, the B-29's achieved a thicker and more uniform pattern than had been possible with the impressionistic methods used at Nagoya.[50]

The results showed conclusively that the Tokyo raid had not been a fluke. The 1,732.6 tons dropped on Osaka in about three hours wiped out 8.1 square miles in the heart of the city. The chief commercial district was ruined, and fires were kindled in the industrial sections where 119 major factories were destroyed, including some engaged in heavy industry. As the flames spread rapidly, fire-fighting and air-raid protection (ARP) services were completely demoralized. Casualties mounted as persons were suffocated in makeshift shelters or were burned trying to run through the flames. The records of the Osaka fire department listed 3,988 dead, 678 missing, 8,463 injured.

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The fury of the fire is indicated by the fact that 134,744 houses were completely destroyed as against only 1,363 merely damaged.[51] In comparison, the cost to XXI Bomber Command was very light. Two B-29's were lost—one at take-off—and thirteen were damaged. The enemy was alerted early enough to assemble his interceptor force but made only a feeble effort. The crewmen reported only forty individual attacks, and no Japanese fighter scored a hit.[52]

Maintaining the tempo of the fire blitz, LeMay sent his force to Kobe on the night of the 16th. Kobe, across the bay from Osaka, was Japan's sixth largest city, her most important overseas port, and a focus of inland transportation. On either side the harbor and the commercial area lay important heavy industry installations. Kobe had been the target of a small test incendiary raid on 4 February and had caught a few stray HE bombs during the attack on nearby Akashi on 19 January,* but remained practically a virgin target.[53]

Operational officers, convinced that visual distribution methods were unsatisfactory, again changed some tactical details. The new field orders called for bombardiers to make a controlled radar run over the target before making visual corrections and to apply such corrections only to their sighting on the aiming point: they were not to spread bombs visually. Kobe, with its long irregular waterfront, provided an excellent radar target. The planners appreciated by now the value of greater concentration to insure the merging of individual fires. Flight schedules were accordingly changed to cut down the duration of the attack and the aiming points were plotted in a closer pattern.[54]

The bomb load was changed out of necessity: the supply of incendiary types previously used was running low. Planning factors by which ammunition stocks had been accumulated had been outmoded by the build-up of forces and the change in tactics. Even more recent estimates were badly off. Only a month before, LeMay had calculated his needs on the basis of 4-ton loads for 735 sorties per wing per month, with bombs in a ratio of 60 per cent high explosives, 40 per cent incendiaries. For the three wings available in March this meant a total of 3,528 tons of incendiaries of all types. Now in three missions he had dispatched 948 planes loaded with about 3,900 tons, well over a month's supply of incendiaries and drawn exclusively from the stocks of M47's and M69's. For Kobe the command had to use the

* See above, pp. 555–56.

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M17AI, a 500-pound cluster of 4-pound magnesium thermite incendiaries. With 110 individual bombs per cluster, the M17 would achieve a wide dispersion and the thermite missiles would be effective in the dock and heavy industry areas, but they were not as destructive as oil bombs against flimsy dwellings. The chief merit of the M17 was its relative abundance.[55]

The attack on Kobe was the heaviest yet delivered and the most highly concentrated: 307 B-29's dumped 2,355 tons in the short space of two hours and eight minutes. The Japanese were up in greater force than for the earlier night raids: B-29 crews reported sighting 314 enemy planes which made a total of 93 individual attacks, but the fighters were unable to interfere seriously. None of the three B-29's lost was hit by fighters.[56]

In March 1944 Kobe had begun to clear out certain strips as firebreaks, but the program had been chiefly aimed at protecting individual targets rather than at preventing fires from sweeping over great districts. The fire early on 17 March quickly got out of hand, destroying the eastern half of the business district and burning out an important industrial area to the southeast. Among the many individual targets heavily damaged was the Kawasaki shipyards, where 2,000-ton submarines were built.[57]

There was some disappointment at Guam when post-strike photos showed that only 2.9 square miles—a fifth of the city's area—had been burned over. Some of the heavy bomb load had been dissipated when navigators had failed to identify their aiming points or when crews, reluctant to penetrate the heavy thermals caused by the fires, had dropped their bombs short of their targets. Even so, Japanese statistics show that the destruction was appalling. About 500 industrial buildings were destroyed, 162 damaged. The loss of 65,951 houses left 242,468 persons homeless. Police reported 2,669 dead or missing and 11,289 injured.[58]

To round out his campaign, LeMay sent his planes back to Nagoya on the night of 19 March. Every third plane carried a couple of 500-pound GP's to disrupt organized fire fighting and loaded up to capacity with such incendiaries as were available in the fast-dwindling dumps—M69's for the 314th Wing, M47's for the 313th, and M47's and M76's for the 73d. Of 313 B-29's dispatched, 290 got to Nagoya to drop 1,858 tons. Bombardiers were bothered by smoke and by searchlights, but by using radar techniques were able to blanket a considerable part of the city. The area burned was larger than in the

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previous raid—three square miles as against two. Many important individual targets were damaged, including the Nagoya arsenal, the freight yards, and Aichi's engine works, but the Mitsubishi plants escaped with minor damage.[59]

The second Nagoya raid brought the March fire blitz to an end. On the 9th, as he awaited the bombs-away signal from Tokyo, LeMay had remarked, "If this raid works the way I think it will, we can shorten this war."[60] The Tokyo raid had been all he could have hoped for, and the succeeding strikes provided additional evidence that the new tactics could indeed shorten the war. The statistics were impressive. With an average of 380 aircraft assigned, XXI Bomber Command had flown 1,595 sorties in 10 days. This was three-fourths as many as had been flown in all previous missions, and the 9,365 tons of bombs dropped was three times the weight expended before 9 March.[61]

Results had been more than commensurate with the effort. The B-29's had left a swath of destruction across four key cities, laying waste to 32 square miles and destroying many important targets. The cost in crewmen had amounted only to 0.9 per cent of those participating, a loss ratio far under that of the daylight missions. The strain on both flight and ground personnel had been tremendous, but neither group showed signs of cracking. Maintenance crews who had worked round the clock to keep the B-29's flying suffered from severe physical exhaustion but recovered rapidly. Combat crews, some of whom had flown all five missions, were fatigued but otherwise finished the ordeal in good physical condition. Morale was sky high. After months of small results and heavy losses, the B-29 had shown its capabilities, and airmen who had become discouraged in the dull routine of tallying combat missions in hopes of rotation took on a more aggressive spirit.[62]

On the tactical side, the implications of the five raids were clear enough. By bombing individually from low altitudes, B-29 crews had vastly improved the performance of their planes: bomb loads had been increased and engine strain had been diminished so that the command could get more sorties per plane. Radar, sufficiently accurate for area bombing, had taken some of the curse out of Japan's weather. Neither flak nor fighters had been able to inflict serious losses at night. Most important of all, Japan's urban areas had proved highly vulnerable to incendiary attack, as some airmen had long insisted. The new techniques could not be used efficiently against all targets, but under suit-

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able conditions they were so highly successful that the doctrines of strategic bombardment were to undergo a radical change.

Both Washington and Guam moved rapidly to exploit the new tactics. The Joint Target Group, after studying reports of the blitz, concluded that there were no strategic bottlenecks in the Japanese industrial and economic system except aircraft engine plants, but that the enemy's industry as a whole was vulnerable through incendiary attacks on the principal urban areas.[63] With this somewhat obvious rationale, the JTG designated thirty-three urban areas as targets of sufficient importance to warrant inclusion in a comprehensive plan of attack. Twenty-two of these were listed in a two-phase program, the first phase emphasizing destruction of ground ordnance and aircraft plants, the second, associated industrial production such as machine tools, electrical equipment, and ordnance and aircraft components. The remaining eleven areas were to be considered later, in light of experience in attacking the twenty-two. The order of the targets was a considered one. Each target was rated A, B, or C according to its relative industrial importance. A few (marked with an asterisk) had been hit before but their target value did not seem to be greatly impaired. The list was as follows:[64]

Target No.	*Target Area*	*Rating*
	FIRST PHASE	
90.17–3600	Tokyo UA/1 (i.e., Urban Area No. 1)	A
90.17–3604	Kawasaki UA/1	A
*90.30–3609	Nagoya UA/1	A
90.25–3617	Osaka UA/1	A
90.17–3601	Tokyo UA/2	A
*90.25–3618	Osaka UA/2	A
90.25–3618	Osaka UA/3	A
*90.20–3611	Nagoya UA/3	A
*90.20–3610	Nagoya UA/2	A
90.34–3630	Yawata UA/1	A
	SECOND PHASE	
90.17–3602	Tokyo UA/3	B
90.17–3608	Yokohama UA/2	C
90.17–3605	Kawasaki UA/2	A
90.17–3607	Yokohama UA/1	B
90.17–3606	Kawasaki UA/3	C
*90.25–3628	Kobe UA/1	A
*90.25–3629	Kobe UA/2	B
90.25–3624	Amagasaki UA/1	A
90.25–3620	Osaka UA/4	B
90.35–3621	Osaka UA/5	B
90.25–3625	Amagasaki UA/2	B
90.20–3612	Nagoya UA/4	B

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REMAINING AREAS

*90.17–3603	Tokyo UA/4	C
90.20–3613	Nagoya UA/5	B
90.20–3614	Nagoya UA/6	B
90.20–3615	Nagoya UA/7	C
90.20–3616	Nagoya UA/8	C
90.25–3622	Osaka UA/6	C
90.25–3623	Osaka UA/7	C
90.25–3626	Amagasaki UA/3	C
90.25–3627	Amagasaki UA/4	C
*90.34–3631	Yawata UA/2	B
*90.34–3632	Yawata UA/3	C

In addition, the JTG named certain priority industrial targets: Osaka Army Arsenal, Kure Naval Arsenal, Hiro Arsenal, Kokura Arsenal, Sasebo Naval Arsenal, and the Koriyama chemical works. In setting up two parallel target systems, the one for area, the other for precision attacks, the Joint Target Group established the pattern which was to guide strategic bombing during the rest of the war.[65]

On the basis of the JTG recommendation, the Twentieth Air Force on 3 April issued a new target directive. Nakajima-Musashino and Mitsubishi's engine works at Nagoya still enjoyed top billing. Second only to these, and without internal priority, the directive listed six of the first-phase urban areas: Tokyo UA/1, Kawasaki UA/1, Nagoya UA/1, Osaka UA/1, Osaka UA/2, Osaka UA/3.[66]

The Joint Target Group based its recommendations on the assumption that the principal function of air attack was to pave the way for an invasion of the home islands. This was the official view and strategic planning favored landings on Kyushu in the autumn. But after studying the results of the March fire raids, LeMay came to the conclusion that with proper logistic support air power alone could force the Japanese to surrender—a view shared privately by some members of Arnold's staff in Washington.[67] LeMay established a new set of planning factors, derived from his March operations, to serve for the six months from April through September. During March, XXI Bomber Command had achieved an operational rate of seven sorties per plane per month. Deployment schedules listed the 58th Wing as available in May and the 315th in July, with an increase in aircraft on hand from 148 to 192 per wing. By maintaining the March rate, LeMay figured his sortie effort as follows: April, 2,925; May, 3,851; June, 4,597; July, 5,460; August, 6,025; September, 6,700.

Combat crews presented a more serious problem than aircraft. Sixty flying hours per month were considered the maximum a crew could endure over a long period. With this limitation, an expected loss

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rate of 2 per cent, and a tour of duty of approximately thirty-five missions, LeMay would need many more crews than he had been promised. This disparity between his needs and his expected receipts was presented graphically in the following table, which was sent to Washington by teleconference on 13 April:[68]

Month	*Crew Receipts Required*	*Crew Receipts Forecast*	*Monthly Shortage*	*Cumulative Crew Shortage*
April	152	152	0	0
May	282	106	176	176
June	217	130	87	263
July	407	148	259	522
August	529	245	284	806
September	324	222	102	908

The forecast crew shortage would curtail seriously the combat effort as figured on the basis of aircraft available, reducing the estimated number of sorties by 469 in May, 777 in June, 1,323 in July, 1,900 in August, and 2,320 in September. By 30 September, the cumulative shortage would reach 6,789, or about 23 per cent of the total number of sorties scheduled. There was one partial solution to the problem. During March B-29 crews had flown eighty rather than sixty combat hours each. If they could maintain this pace for six months, they could cut down the cumulative shortage to 2,920. LeMay's flight surgeon and his wing commanders were convinced that the rate of eighty hours per month for six consecutive months might burn out his crews —even the sixty-hour rate was greater than that maintained by the Eighth Air Force. But LeMay in another difficult command decision elected to take the risk, to drive his crews at the rate of eighty hours a month. It was a short-term policy, deliberately adopted in the hope that it would bring about a quick and decisive pay-off.[69]

Again, as in the decision to launch the low-level night attacks, the calculated risk had some comforting arguments in its favor. Combat crews had come through the March blitz in remarkably good shape; though nervous fatigue would be a limiting factor in extended and heavy operations, performance had indicated that the B-29 crews could be "flown to death." LeMay summed up his attitude in a message to Norstad on 25 April:

> I am influenced by the conviction that the present stage of development of the air war against Japan presents the AAF for the first time with the opportunity of proving the power of the strategic air arm. I consider that for the first time strategic air bombardment faces a situation in which its strength is proportionate to the magnitude of its task. I feel that the destruction of Japan's ability to

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wage war lies within the capability of this command, provided its maximum capacity is exerted unstintingly during the next six months, which is considered to be the critical period. Though naturally reluctant to drive my force at an exorbitant rate, I believe that the opportunity now at hand warrants extraordinary measures on the part of all sharing it.[70]

This view was not for public consumption. The AAF had stressed the importance of playing up the teamwork of the several services in public utterances, and the experience in Europe had shown how difficult it would be to defeat an enemy by air power alone. LeMay kept trying to increase his rate of crew replacements, even offering to accept B-17 and B-24 crews with a minimum of transition training, but in the meanwhile he would use what resources he had in an effort to break the enemy's ability and will to resist.

Before he could launch the heavy attack on Japanese industry, however, LeMay had to fulfill commitments in support of the Okinawa campaign which had begun with the landings on 1 April.

Support of ICEBERG

The accelerating pace of the Allied drive toward the heart of the Japanese Empire during 1944 and 1945 inevitably brought some changes in the schedule of planned operations. Such was the case when the Joint Chiefs decided on 2 October to bypass Formosa (set up for 15 February 1945) in favor of a landing in the Ryukyus on 1 March.* Nimitz had suggested the change, and in compliance with a JCS directive of 3 October he put his staff to work on a plan for the capture and development of Okinawa, largest island in the Ryukyu chain. The assault operation, which turned out to be one of the bloodiest jobs of the Pacific war, was largely the work of POA forces whose story has been told in detail by others.[71] Because the chief purpose of the campaign (coded ICEBERG) was to secure air-base sites near Japan, the AAF was keenly interested in the operation. Plans called for the development of VHB bases which would have helped in the strategic bombardment of Japan, but those fields were to be built too late to serve the B-29's, and meanwhile the support rendered by XXI Bomber Command was to retard seriously its primary strategic mission.

The CINCPOA planners had to assume that earlier operations would have progressed enough to release forces needed at Okinawa:

* See above, pp. 392–93.

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Navy support units, air and surface, from Iwo Jima and ground and Navy combat units, with assault shipping, from the Philippines. They also had to assume that preliminary operations would secure for the expeditionary forces control of the air in the target area. It early appeared that success or failure of the operation would turn on air superiority: the enemy's fleet was too battered to offer a serious challenge, and if a sufficient ground force could be put ashore and supported, it could overcome the island defenders even though they fought with their customary skill and courage. In the air the enemy might prove formidable. The Japanese thoroughly appreciated the importance of Okinawa and could be expected to throw against the assault forces and their support ships the full weight of the homeland air forces, augmented by units withdrawn from the Philippines. Okinawa was little more than 300 miles from the southern tip of Kyushu, and airfields on the latter island were within operating radius of the invasion zone for all categories of aircraft; conversely, the distance from the nearest U.S. bases, on Luzon, was too great to allow assault support by land-based fighters.[72] As plans for ICEBERG developed, the Japanese unleashed in the battle of Leyte Gulf a new and terrible air weapon in the *kamikaze*, or suicide, plane.* The threat of such a weapon in the hands of fanatics was grave enough materially to affect the plans for the assault.

Nor were the planners mistaken in their concern: time was to show how heavily the Japanese had counted on the *kamikaze*. Its very considerable success in the Philippines, where 174 hits or damaging near misses were scored, was exaggerated by Japanese military leaders, partly in ignorance, partly for propaganda purposes; and a large number of "special attack units" were organized by both army and navy air forces. With personnel drawn from combat units and training organizations and with all manner of aircraft, including obsolescent and training planes, the *kamikaze* force would constitute the main strength of the Fifth Air Fleet defending Okinawa. The high command hoped that mass suicide, or *kikusui*, missions would destroy U.S. naval units and supporting craft and so isolate the assault troops that the Japanese Thirty-second Army, charged with the ground defense of Okinawa, would be able to drive the invaders into the sea.[73]

Plans for ICEBERG were worked out in broad outline in a con-

* See above, pp. 356, 363, 368–69, 479–81.

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ference (FIVESOME) at Hollandia in early November 1944.* The Twentieth Air Force was represented by Col. William Ball who had just come out from Washington to join Harmon's staff as deputy commander for operations. Arnold and his theater commanders were concerned over the amount of B-29 effort that would have to be diverted from the primary mission of both the XX and XXI Bomber Commands. The support agreed on tentatively at Hollandia consisted of reconnaissance of Okinawa and strikes against airfields in Kyushu and Formosa from which the enemy could attack the invasion forces. The Joint Chiefs and the theater commanders involved accepted the plan subject to certain modifications, and Arnold made it clear that final approval would be contingent on the choice of suitable objectives for the B-29's: normally airfields were not considered proper VHB targets.[74]

Subsequent events in the Pacific and in CBI brought changes in the plans for B-29 cooperation. The decision of 15 January to withdraw XX Bomber Command from its China bases† canceled its part in the program save in respect to photo reconnaissance of the Ryukyus.[75] Delays in MacArthur's Luzon campaign forced Nimitz to set back his L-day from 1 March to 1 April, and in the meanwhile XXI Bomber Command was forced to carry out, in the face of bad weather, a number of photo-reconnaissance missions over Okinawa.[76] On 7 March representatives of Nimitz, AAFPOA, and LeMay met to draw up a final plan for B-29 support for ICEBERG. They proposed the following schedule:

1. L minus 22 to L minus 10: maximum operations against Honshu.
2. L minus 20 and L minus 10: photo reconnaissance of Nansei Shoto, with particular attention to Okinawa Gunto, if requested by CinCPOA.
3. When requested: reconnaissance of enemy picket boats in specific areas desired by CinCPOA.
4. L minus 10 to L minus 5: a) L minus 10 or L minus 9 (depending on weather), attack against Kyushu air installations, as selected by CinCPOA, if visual bombing possible. Under radar bombing conditions, attack will be made against Nagasaki or Omura. b) L minus 6 or L minus 5, repeat above plan of attack.
5. L minus 10 to L minus 5: mining of Shimonoseki Straits with 1,500 mines which it is estimated will effect complete closure for four weeks.
6. After L minus 5: full-scale operations against Honshu will be resumed.[77]

* See above, pp. 146–47, 404–5.
† See above, pp. 151–52.

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LeMay, busy with his fire raids, did not like this schedule. He forwarded it to AAFPOA on 12 March but next day suggested to Arnold a revised program: paragraphs 2 and 3 were eliminated and the operations planned in paragraph 4 were to be limited to a single mission, delivered on L minus 5 or 4.[78] This plan Arnold accepted in a message of 15 March but within a few hours dispatched a second message withholding final approval until he had been informed of the specific targets on Kyushu.[79] The targets, in order of priority, were airfields and installations at Kanoya, Miyasaki, Tachiarai, Nittagahara, Kagoshima, Omura, Oita, and Saeki. These Arnold accepted, but with the proviso that the attacks were to be made against permanent installations rather than the strips, unless the latter were crowded with planes.[80] The target directive issued by the Twentieth Air Force on 3 April* reaffirmed the importance of the B-29's primary mission but without compromising the commitments in support of ICEBERG. In spite of a continuing reluctance to use the B-29 as a tactical bomber, Arnold's office was willing to go beyond minimum requirements as stated in the original JCS directive governing Twentieth Air Force operations.† According to that arrangement, Nimitz as theater commander could direct the employment of XXI Bomber Command in a tactical or strategic emergency. Norstad, in a long teleconference of 31 March, informed LeMay that the Twentieth's primary interest was to insure the success of ICEBERG at a minimum cost of time and of casualties. LeMay was to tell Nimitz that CINCPOA could use XXI Bomber Command whenever the B-29's could have a decisive effect whether an emergency existed or not.[81] Effectively, this was to give Nimitz control of most of the B-29 effort during the next five weeks.

Meanwhile, the Okinawa operation was getting off to a late start. The assault was to be mounted from Leyte, Saipan, Oahu, and the west coast of the United States, and as the scattered Army and Marine units of Lt. Gen. Simon B. Buckner's Tenth Army were getting their final training, Navy and AAF planes were at work softening up the Ryukyus and Kyushu. During February and March aircraft from the Marianas or SWPA were over the Ryukyus almost every day; search and patrol bombers covered the adjacent seas. Planes from Mitscher's Task Force 58 had hit Okinawa in October and January, in preparation for Leyte and Luzon, and again on 1 March. On 18 and 19 March

* See above, p. 625.
† See above, p. 38.

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the task force worked over airfields and harbors on Kyushu, Shikoku, and western Honshu. On the 26th and 27th, the 77th Infantry Division landed on the Kerama Islands, fifteen miles west of Okinawa.[82]

On the latter day, XXI Bomber Command flew its first scheduled mission against Kyushu. Targets were the Tachiarai Army Airfield, the Oita Naval Airfield, and the Omura aircraft plant. Tachiarai was important as a training center, as an air base, and as seat of an army air arsenal; Oita had both a seaplane and fighter base. The Omura plant was new and large and apparently important as a factory and repair base. LeMay's crews had enjoyed some rest after the fire blitz, broken only by a 250-plane raid against the Mitsubishi plant at Nagoya on 24 March. Now, on the 27th, 165 B-29's from the 73d and 314th Wings got off. They met little opposition over Kyushu, and 151 planes bombed the primary targets, destroying or damaging 606,500 square feet at Tachiarai, 112,175 at Oita, and 250,000 at Omura.[83]

That night the 313th Wing sowed aerial mines in the Shimonoseki Strait. The mission was intended to bottle up the Inland Sea during the Okinawa assault, but it inaugurated a mining campaign which was to have strategic as well as tactical objectives.* The 314th sent 12 planes against the Mitsubishi engine works at Nagoya on the night of the 30th.[84] Next day—L minus 1 for Okinawa—XXI Bomber Command flew its second diversionary mission against Kyushu, returning to Tachiarai and Omura. Of 152 planes airborne, 137 bombed with excellent results. The Tachiarai machine works was completely destroyed and the airfield at Omura, the other primary target, was liberally plastered with high explosives. Enemy fighters scored hits on fifteen B-29's but without knocking any down.[85]

Meanwhile, final preparations for the landing at Okinawa had been made: carrier-based planes had worked the island over, naval gunfire had softened up defense positions, minesweepers and underwater demolition teams had cleared a path to the shore. At 0830 on Easter morning, 1 April, Marines and Army infantrymen stormed the Hagushi beaches. The landings, contrary to estimates, proved easy. More than 16,000 troops were ashore in an hour, more than 60,000 by nightfall. The assault troops rapidly expanded their positions, and by 4 April the Tenth Army held a chunk of Okinawa fifteen miles long and three to ten miles wide, including two airfields of great potential importance, Yontan and Kadena. *Kamikaze* planes had hit the *West*

* See below, pp. 662–74.

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Virginia and two transports, damaged two LST's, but air resistance, like the defense of the beaches, had fallen far short of expectations.[86] The XXI Bomber Command, having done its stint of mining and its two scheduled strikes against Kyushu, turned back to its strategic campaign with a mission against Nakajima-Musashino on 1 April.[87]

All hopes for an easy victory at Okinawa were soon dissipated, however. On 6 April the Japanese opened up with one of the most furious air counterattacks of the Pacific war. About 355 *kamikazes* and almost as many conventional fighter and reconnaissance planes flew down from Kyushu to hit at shipping and ground forces ashore. An elaborate defense against just such a mission had been set up, with picket boats, carriers, an air patrol, and flak of all calibers. Claims of Japanese planes destroyed ran to 300, but suicide crashes sank two destroyers, a minesweeper, two ammunition ships, and an LST and damaged other ships. That night, a surface force comprising the battleship *Yamato*, the light cruiser *Yahagi*, and eight destroyers slipped out of Tokuyama for an attack on U.S. shipping off Okinawa. The mission was conceived in the *kamikaze* spirit, but it met with less success than previous ones. A plane from the *Essex* spotted the force on the morning of the 7th, and Task Force 58, though busy with a *kamikaze* attack, sent its planes northwestward to intercept. Before dark, they had sunk the *Yamato*, the *Yahagi*, and four destroyers. This was to be the last sortie of surface ships during the campaign, but it was realized that the graver menace of suicide planes had not ended.[88]

The emergency was such that Nimitz would have been justified in diverting the B-29's from their primary mission even without the extraordinary powers vested in him by Norstad's message of 31 March. On 8 April, LeMay sent 53 planes of the 73d and 313th Wings against airfields at Kanoya, whence the enemy seemed to be launching his suicide attacks. Finding the primary targets completely obscured by clouds, the bombers hit the secondary, the city of Kagoshima, where they destroyed part of the residential district. Nimitz called for another strike on the 17th, and 134 B-29's went out against six Kyushu airfields. Results were difficult to assess, but Nimitz expressed the belief that the mission greatly decreased the Japanese attack at Okinawa during the next eighteen hours.[89]

However, the enemy came back repeatedly. Between 6 April and 22 June he launched from Kyushu airfields ten large-scale *kikusui*

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attacks totaling, as accurately as can be determined from Japanese sources, 1,465 *kamikaze* sorties. There were in addition 185 individual *kamikazes* flown from Kyushu and 250 from Formosa—a grand total of 1,900 suicide sorties, plus many standard escort sorties. In all, the Japanese sank 25 Allied ships while scoring 182 hits and 97 damaging near misses.[90]

The continuing threat demanded that every available weapon, including the B-29, be used to protect the invading forces. LeMay had informed Norstad of his diversion of 8 April, and on several occasions —17 April, 28 April, and 5 May—the latter reiterated the earlier directive committing XXI Bomber Command to Nimitz' use.[91] Between 17 April and 11 May, the command devoted about 75 per cent of its combat effort to direct tactical support of the Okinawa campaign. In that period the B-29's flew 2,104 sorties against 17 airfields on Kyushu and Shikoku.[92] The fields, in order of frequency of attack, were: Kanoya, 15 attacks; Oita, 9; Kokubu, 9; Miyasaki, 8; Miyakonojo, 8; Kanoya East, 7; Tachiarai, 7; Izumi, 6; Kushira, 6; Nittagahara, 4; Usa, 4; Saeki, 4; Matsuyama, 4; Tomitaka, 3; Omura, 2; Ibusuki, 2; Chiran, 1.[93] In April, when the Japanese attacks were fiercest, XXI Bomber Command sent out heavy strikes, usually of well over a hundred planes drawn from all three wings. As the *kamikaze* raids diminished in size and as U.S. land-based air forces in the Ryukyus were built up,* demands on the B-29's lessened so that during May only part of a single wing was assigned to each attack.[94]

The raids were designed not only to destroy airfield installations but to keep enemy fighters at home and hence out of the battle for Okinawa. Fighter opposition to the B-29's fluctuated but was generally weak. During the third week in April, after the command had intensified its attacks, the Japanese increased their fighter forces in Kyushu from a combat strength of 75 single-engine and 22 twin-engine planes to an estimated total of 282, including 60 Navy interceptors. Apparently the enemy was funneling fighters through Kyushu to escort *kamikazes* going down to Okinawa. Later some of the short-range interceptors were sent back to Tokyo and indeed the enemy shifted his dwindling air forces so continuously that mission planning for Kyushu strikes after 30 April was based on a day-by-day estimate of the opposition that might be expected.[95] Interceptions varied from none at all on 4 raids to 199 individual attacks on 27 April.

* See below, pp. 692–93.

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B-29 crewmen reported a total of 1,403 such attacks and claimed 134 enemy planes destroyed and 85 probably destroyed. Antiaircraft was weak except at Kushira and the two Kanoya fields; only one plane was destroyed by flak. In all, 24 B-29's were destroyed and 233 damaged.[96]

This was a light loss ratio; what the B-29's accomplished in return (other than against enemy interceptors) is difficult to evaluate. The B-29's went in at lower levels than in day strikes at heavily defended targets, at altitudes from 10,000 to 18,000 feet, and they frequently laid excellent bomb patterns on the runways, dispersal areas, and installations. But the enemy usually had warning enough to get his planes off the fields, and he was able to repair cratered runways in a matter of hours. After considerable experimentation with fragmentation and GP bombs, the command concentrated on the 500-pound GP, with fuzes varying from instantaneous to delays up to 36 hours, a combination which did hinder repairs.[97] Best results were obtained against storage, maintenance, and repair facilities, but these affected future rather than current air operations. In general, the whole campaign was judged by Twentieth Air Force leaders to have confirmed their opinion that the B-29 was not a tactical bomber. Specifically, it was estimated that between 17 April and 11 May, 95 per cent of the enemy's 1,405 combat sorties were flown on the same day that some of their key bases were being attacked by the Superforts.[98]

Yet the effort was not wholly wasted: the *kamikaze* threat was defeated by the combined efforts of all available forces; the B-29's helped by keeping the enemy off balance, by making it difficult to plan and execute large and coordinated attacks such as the severe one of 6/7 April. Certainly the Navy was anxious that the B-29's keep at the job of striking at the Kyushu fields even when it became clear that a complete neutralization could not be achieved.[99]

Nimitz called also on the VLR escorts of VII Fighter Command. The Iwo-based fighters had accompanied the B-29's to Tokyo on 7 and 12 April* and had planned as their first independent mission a sweep over Atsugi airfield, the largest the Japanese had, for the 16th. In the emergency at Okinawa, Kyushu seemed more important, and after a last-minute change in plans the fighters headed for Kanoya. Because of the rush, pilots were not properly briefed, and they found poor visibility over Kyushu; only 57 of 108 P-51's airborne were able

* See below, pp. 647–48.

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to attack.[100] On the 19th and 22d the fighters worked over airfields on Honshu, then returned to Kyushu on the 26th as escort for a B-29 strike at the Kokubu field.[101] Throughout the rest of the Okinawa campaign, and thereafter, the P-51's periodically made sweeps over Empire airfields in search of planes and suitable installations to attack.

The total P-51 effort was not very fruitful. Between 26 April and 22 June, there were 832 strike sorties, of which only 374 were effective. Claims included 64 enemy planes destroyed, 180 damaged on the ground, and 10 shot down in combat.[102] The VII Fighter Command lost eleven planes in combat and seven from other causes; although the exchange was in its favor, there was nothing like the widespread destruction that had been desired. Weather was in part responsible. Four missions were wholly spoiled by heavy clouds, and for ten days early in May the fighters were weathered in at Iwo Jima. Enemy planes were hard to find. They rarely came up in force, as the low combat score indicates; only 145 were sighted aloft during May. Nor were they to be found in great numbers on the ground; the enemy's constant shifting of planes from field to field and his increased use of dispersion, dummies, and camouflage left few fat targets. Pilots of the P-51's often found it impossible to set fire to grounded planes, an indication that gas tanks had been drained.[103]

Nimitz released XXI Bomber Command from further support of the Okinawa campaign on 11 May with a message of thanks.[104] The island was not officially declared secure until 2 July; organized resistance had lasted until 22 June and *kikusui* attacks from Kyushu had continued until that date.[105] But by 11 May airfields at Yontan and Kadena and on Ie Shima had been put into shape to handle enough fighters* to justify the discharge of the B-29's from their unprofitable chore, and LeMay returned to his unfinished business on Honshu.

Destruction of the Principal Cities

The period of ICEBERG support had not been a total loss in respect to the strategic campaign. The target directive of 3 April had left aircraft engine plants in first priority but had stressed the need of continuing the March incendiary tactics against selected urban areas in Tokyo, Kawasaki, Nagoya, Osaka, and Yawata.† Between the Kyushu strikes, LeMay had been able to sandwich in a number of

* See below, p. 691.
† See above, p. 625.

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medium-strength precision attacks against the aircraft industry and two large-scale night incendiary missions in the Tokyo Bay area. On 13 April, 327 B-29's had dumped 2,139 tons on the arsenal district of Tokyo, northwest of the Imperial Palace. Fires burned out 11.4 square miles of that important industrial section, destroying arsenal plants that manufactured and stored small arms, machine guns, artillery, bombs, gunpowder, and fire-control mechanisms.[106] Two nights later 303 B-29's dropped 1,930 tons of incendiaries with equal success: areas destroyed included 6 square miles in Tokyo (mostly along the west shore of the bay), 3.6 square miles in Kawasaki, and 1.5 in Yokohama, which was hit by spillage. The two raids destroyed 217,130 buildings in Tokyo and Yokohama, 31,603 in Kawasaki. Japanese statistics on casualties at Tokyo vary widely, but in any event were much less frightful than those of the surprise raid of 9 March.[107]

On 10 April Col. Cecil E. Combs had recommended to Norstad that incendiary attacks be intensified immediately after V-E Day in an effort to bring about a quick surrender in Japan. The German surrender was announced on 8 May, and on the 11th Nimitz released the B-29's from support of the Okinawa operation. Arnold immediately reconfirmed his target directive of 3 April, stressing, as Combs had suggested, the importance of concentrating the command's efforts "in order to capitalize on the present critical situation in Japan."[108] LeMay needed no urging. His force had been augmented by the arrival of Brig. Gen. Roger M. Ramey's 58th Wing, which had settled at West Field, Tinian, during April.* Willing to drive his crews in an effort to force Japan to surrender without an invasion which would repeat on a grand scale the horrors of Okinawa, LeMay inaugurated a month of heavy fire raids to finish up the job begun in March, while striking, as opportunity allowed, the top-priority precision targets.†

Target for the first raid of the new incendiary series was the northern built-up area of Nagoya, the vicinity around Nagoya Castle. This industrial-residential district included the No. 1 precision target, the Mitsubishi Aircraft Engine Works, as well as the Mitsubishi Electric Company, the Chigusa branch of the Nagoya Arsenal, and many lesser war industries. The mission was scheduled as a daylight strike, partly to confuse the Japanese defense, partly in the interest of accurate bombing; it was run on 14 May.[109]

* See above, p. 166.

† For the precision attacks, see below, pp. 646–53.

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A total of 529 aircraft got off and 472 dropped 2,515 tons of M69's on the target from altitudes ranging from 12,000 to 20,500 feet. Bombing was supposedly downwind, but smoke blown across the area made it necessary for some planes to resort to radar. Residential sections under attack were only moderately built up, and although 131 separate blazes were identified, efficient work by the fire department kept some of these in check. Only one large conflagration got out of hand and that was stopped by a 200-foot firebreak near the castle. Even so, the numerous burnt-out areas when summed up amounted to 3.15 square miles; Mitsubishi's No. 10 engine works lost its Kelmut bearing plant and suffered other damage. Enemy reaction to the daylight attack was lively. In all, ten B-29's were lost, one to flak, one to fighters, and eight to other causes; sixty-four were damaged. The B-29 crews claimed eighteen enemy planes destroyed, sixteen damaged, and thirty probables during the battle.[110]

The command went back to Nagoya on the night of 16 May in the last great area attack on that city. The target was the dock and industrial areas in the southern part of the city, location of the Mitsubishi Aircraft Works, the Aichi Aircraft Company's Atsuta plant, the Atsuta branch of Nagoya Arsenal, the Nippon Vehicle Company, and other numbered targets. The mission was planned as a low-level attack, with pathfinders pinpointing the aiming points with M47 incendiaries and the other B-29's dropping M50's, magnesium bombs suitable to the heavy structures in the area.[111]

The mission, when compared to that of the 14th, illustrates graphically the relative advantages of day and night tactics. Again it was a maximum effort, with 522 planes dispatched. Fewer planes—457 as against 472—were able to attack the primary target, but the low-altitude, individual approach allowed a heavier bomb load—about 8 tons as against 5.3 per plane—and the total weight dropped was 3,609. Because of smoke and thermal drafts, some planes had to bomb from levels much higher than those designated in the field orders and this tended to decrease accuracy. As usual in night attacks, opposition was weak; the three B-29's lost were charged off to mechanical failures. Advantages and disadvantages, save in losses, about balanced out. The raid of the 16th started 138 fires which burned out 3.82 square miles. Mitsubishi's No. 5 aircraft works was heavily damaged. Because of the progress of dispersal in the works, there was little change in production after the raid, though No. 5's Mizuho plant,

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still making engine cowlings, turned out only twenty units thereafter.[112]

This finished Nagoya as an objective for area attacks. Good targets remained in the city, and the command was to return six more times for precision attacks before V-J Day. But the industrial fabric of the city had been ruined in the earlier precision attacks and in the fire raids that had burned out twelve square miles of a total built-up urban area of about forty square miles. In all, 113,460 buildings had been destroyed, 3,866 persons had been killed and 472,701 rendered homeless. The displacement of workers aggravated the difficulties caused by physical damage and had an important effect on civilian morale.[113]

After a week's respite, broken by a 318-plane precision attack,* XXI Bomber Command went back on the nights of 23 and 25 May for a final one-two knockout blow against Tokyo. In four previous area raids more than 5,000 tons of bombs had destroyed 34.2 square miles; 2,545 tons had been expended in precision attacks. The target for the 23d was what JTG called Tokyo Urban Area No. 3, a district stretching southward from the Imperial Palace along the west side of Tokyo harbor that included both industrial and residential communities. The Emperor's palace presented, as in other raids, a special problem. Its huge grounds served as a convenient checkpoint for navigators but constituted a most effective barrier against the spread of fires. Pilots, on orders from Washington, were briefed to avoid it "since the Emperor of Japan is not at present a liability and may later become an asset."[114]

The 562 B-29's airborne included 44 pathfinders; the tactics called for the familiar and successful combination of M47 and M69 incendiaries. There were relatively few aborts and strays, and 520 B-29's got over target to drop 3,646 tons from altitudes ranging from 7,800 to 15,100 feet. The planned axis of attack had been designed to avoid the heaviest ground defenses but flak was intense; fighters were less effective. In all, seventeen B-29's were lost (four to operational causes) and sixty-nine damaged. Weather was bad and bombardiers had trouble with smoke and the searchlights but were able to get enough bombs into the area to burn out 5.3 square miles.[115]

Two nights later 502 B-29's returned to attack an area just north of that hit on the 23d and nearer to the Imperial Palace. The new target included parts of the financial, commercial, and governmental

* See below, p. 650.

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districts of Tokyo, as well as the familiar combination of factories and homes. Cloud coverage was light—3/10 as compared to 9/10 on the 23d—but cloud and smoke forced most of the bombardiers to loose by radar. Again the defense was rugged; crews reported the heaviest flak of the campaign, and the toll of losses from all causes amounted to twenty-six B-29's destroyed and an even hundred damaged.[116]

The attack was, however, highly successful. Photos showed that the fires kindled by 3,262 tons of incendiaries had destroyed 16.8 square miles, the greatest area wiped out in any single Tokyo raid, though the attack of 9 March had accomplished almost as much with about half the bomb weight. In all, the six incendiary missions had gutted Tokyo, burning out 56.3 square miles, 50.8 per cent of the entire city area and slightly more than the sum of the designated target areas. Tokyo, like Nagoya, was scratched from the list of incendiary targets.[117]

Yokohama came next. Situated on the crowded west shore of Tokyo Bay and separated from the capital by Kawasaki, Yokohama, with a prewar population of 968,091, was Japan's fifth largest city and her second largest port. It was an important shipbuilding and automotive center, and the target area included, in addition to installations devoted to those industries, plants engaged in oil refining, alumina processing, and the manufacture of chemicals. Yokohama had been hit by spillovers on various raids and had suffered especially in the Tokyo raid of 15 April, but had never been named as primary target.[118]

LeMay scheduled a daylight incendiary mission to Yokohama for 29 May. Relatively heavy losses in the recent Tokyo night missions had caused some concern in command headquarters; to avoid more serious casualties by day new tactics were devised. Field orders called for a high-altitude formation attack, with the groups crossing a time-control point on the Honshu coast at four-minute intervals. Aiming points were assigned to each wing according to a schedule of downwind bombing which was calculated to give the crews at least one drop in the target zone before it was obscured by smoke. As an antidote against the swarms of day fighters concentrated in the Tokyo Bay area, LeMay called on VII Fighter Command's Iwo-based P-51's; this would be their first assignment as escorts on an incendiary mission.[119]

The 517 B-29's airborne found better weather than was usual in

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day missions and had no trouble rendezvousing with the escorts. An escort of 101 P-51's merged with the bomber stream at Fujiyama, a flight of fighters accompanying each element of bombers into the target zone, flying parallel, in trail, and about 2,000 feet above. The precaution was not wasted. Approximately 150 aggressive Zekes came up in a determined effort to turn back the B-29's but were no match for the P-51's; Mustang pilots claimed twenty-six destroyed, nine damaged, and twenty-three probables for a loss of only three. Even with this help, the B-29's found the going tough; 175 were damaged and 5 lost. Early formations were able to bomb visually, but as was usual in such heavy attacks, late-comers were bothered by smoke and had to resort to radar. A total of 454 B-29's bombed, dropping 2,570 tons of M47 and M69 incendiaries. Fires cleaned out the main business district along the waterfront, destroying an area of 6.9 square miles, a third of the city. Twenty numbered targets were destroyed or damaged. The total burnt-out area now amounted to 8.9 square miles, somewhat more than the planned target area.[120]

With the principal urban areas around Tokyo Bay reduced to cinders, XXI Bomber Command turned westward to the urban complexes crowding the shore line of Osaka Bay. There in four closely spaced missions, the command brought the first phase of its incendiary program to a flaming end. Osaka had been heavily damaged in the incendiary raid of 13 March. There were still important areas untouched, but since the core of the city had been burned out, these were scattered and hard to hit by the standard night tactics. LeMay consequently reverted to daylight missions, dispatching a force of 521 B-29's on 1 June to finish off the heterogeneous districts lying along the Yodo River, where heavy and light industries were mixed in with port facilities, warehouses, storage dumps, shipbuilding yards, and petroleum installations. Bomb loadings varied according to the specific targets assigned each wing, but every plane carried in addition to incendiaries one T4E4 frag cluster loaded to fall first and thus discourage fire fighters.[121]

The VII Fighter Command was called on for escort but had weather trouble. En route to the rendezvous, 148 P-51's encountered a solid front which extended from the sea to 23,000 feet. Acting on information given by a weather plane and expecting to break through the clouds quickly, the fighters plunged into the front only to hit a severe thunderhead which had not been identified. They attempted

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an immediate turn out of the front but, flying blind in excessive turbulence, a number of the P-51's collided. This tragic error cost twenty-seven planes and twenty-four pilots. Only twenty-seven of the fighters managed to bull it through to take the B-29's over the target, where enemy reaction was stiff.[122]

Bombing from altitudes of from 18,000 to 28,500 feet, 458 B-29's dropped 2,788 tons on Osaka. Ton for ton, the attack was less successful than the March raid—as had been expected—but the results still were significant: 3.15 square miles burned out (plus a small area in nearby Amagasaki); 136,107 houses and 4,222 factories destroyed; 3,960 persons dead or missing and 218,682 rendered homeless; and some numbered industrial works wiped off the map.[123]

On 5 June the command crossed to the west shore of the bay to hit Kobe, previously fire-bombed on 16 March and more recently damaged by spillovers from a precision attack against the Kawanishi aircraft plant in suburban Mikage on 11 May.* Important districts to the east and west of the razed area remained untouched and contained, in addition to business and residential sections, heavy and light industries and transportation facilities. The 473 B-29's that attacked (out of 531 airborne) went in unusually low for a daylight strike, dropping 3,077 tons from altitudes of from 13,650 to 18,000 feet. Enemy fighters were up in force to meet the unescorted bombers, making 647 attacks; 11 B-29's were lost (two to operational causes) and 176 were damaged. The attack eliminated Kobe as an incendiary target, burning off 4.35 square miles in which 51,399 buildings were destroyed, 928 heavily damaged. Here, as at Osaka, the attack had been heavily concentrated, with the bombers over the city for only an hour and a half as compared to the earlier three-hour raids.[124]

Back at Osaka in a 458-sortie effort on 7 June, XXI Bomber Command struck at the east-central section of the city, which contained a number of industrial and transportation targets and the Osaka Army Arsenal, a prime source for ground force ordnance. Three wings carried incendiaries, but planes of the 58th loaded 1,000-pound high explosives in an attempt to knock out Japan's largest arsenal.[125] Heavy clouds made the escort of 138 P-51's superfluous. No B-29's were lost to enemy action; the eleven suffering damage were hit by flak. Because of the heavy undercast, the 409 planes bombing dropped by radar. Despite this handicap and a moderately high attack (17,-

* See below, pp. 649–50.

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900 to 23,150 feet), the 2,540 tons of bombs burned out 2.21 square miles and destroyed 55,333 buildings, of which 1,022 were industrial.[126]

Osaka got a week's uneasy respite; then on 15 June, LeMay sent his planes back for a mop-up job. There was not enough left in the city to justify a maximum effort, so the mission was planned with two "mean points of impact" there, three in neighboring Amagasaki. This industrial suburb contained, besides the Kawanishi factory, some large synthetic oil refineries, strategically important power plants, and many miscellaneous industrial firms.[127]

It was a token of the efficiency of the command's maintenance system that it was able, after a month of maximum-effort missions, to put up 516 B-29's, almost as many as had gone out in the first four-wing attack. The VII Fighter Command provided a P-51 escort, but 380 miles from Iwo Jima the fighters were warned by a weather plane of a towering front over Japan and, with their recent misadventure still fresh in mind, they turned back. They were hardly needed; no plane was lost to enemy action and only one was damaged. Over the two cities for two hours and eleven minutes, 444 B-29's dropped 3,157 tons; because of the scattered nature of the targets, the total area burned over was less extensive than usual—an additional 1.9 square miles in Osaka and 0.59 square miles in Amagasaki.[128]

This was not as clear-cut an example of the law of diminishing returns as it might seem. At Osaka, the 13 March raid had swept through the most congested residential and commercial districts, thereby creating new and extensive firebreaks that divided the remnants of the city into separate target areas. But the widespreading flames, though accounting for more than half of the total of 15.6 square miles consumed in all attacks, had left intact 90 per cent of the industrial roof area. The June raids, less impressive in total acreage consumed, hit industrial buildings more severely, accounting for an additional 25 per cent of the roof area.[129]

The 15 June raid completed Phase I of the urban area program. The objectives listed by the JTG and confirmed by Arnold's directive had been accomplished with dispatch and a thoroughness rarely possible in a comprehensive strategic bombardment plan. In boldness of concept and skill of execution the fire blitz resembled USSTAF's "Big Week" of February 1944 in the ETO,* and in results the cam-

* See Vol. III, Chap. 2.

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paign against the Japanese cities was the more final. LeMay had departed from the JTG's schedule by scratching Yawata on Kyushu and substituting Kobe, thus concentrating his efforts in three areas on Honshu. Otherwise he had followed the JTG–Twentieth Air Force plan with remarkable fidelity, as the following table will show:[130]

City	*Total Urban Area Square Miles*	*Planned Target Area Square Miles*	*Area Destroyed Square Miles*
Tokyo	110.8	55	56.3
Nagoya	39.7	16	12.4
Kobe	15.7	7	8.8
Osaka	59.8	20	15.6
Yokohama	20.2	8	8.9
Kawasaki	11.0	6.7	3.6
TOTAL	257.2	112.7	105.6

The six most important industrial cities in Japan had been ruined. Great factories had been destroyed or damaged; thousands of household and feeder industrial units had gone up in smoke. Casualty lists ran into six figures. Millions of persons had lost their homes, and the evacuation of survivors had made it difficult to secure labor for those factories that remained.[131]

The air-raid protection system in Japan was pitifully inadequate to the needs of a protracted siege by VHB planes—inadequate in organization, trained personnel, shelters, fire-fighting equipment, facilities for relief and evacuation, and in indoctrination for civilians. Under the strain of successive major attacks, local ARP organizations collapsed, throwing an additional burden on the overtaxed imperial government. Nurtured on victory propaganda, Japanese civilians showed under the stress of urban attacks little of the discipline which had carried German citizens through several years of aerial bombardment. Inhabitants of the great cities, already disturbed by news of military defeats and by B-29 precision attacks, lost confidence in their leaders' ability to defend them from attack or to care for the victims.[132] Motoki Abe, Minister of Home Affairs, said later: "I believe that after the 23–24 May [*sic*] 1945 raids on Tokyo, civilian defense measures in that city, as well as other parts of Japan, were considered a futile effort."[133]

The probable effect of the raids on Japanese morale were accurately diagnosed by Joseph C. Grew, Ambassador to Japan until Pearl Harbor and Acting Secretary of State in the spring of 1945. Immediately

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after the Tokyo attacks of 23 and 25 May, he attempted to persuade Truman to temper his "unconditional surrender" message of 8 May with a statement that the United States had no intention of abolishing the emperor's office. Grew thought that with such a guarantee the Japanese, to avoid further losses at home, might be willing to capitulate. According to Grew's account, Truman was sympathetic to the proposal but was dissuaded by his military advisers, who feared that such a concession during the tough going on Okinawa might be interpreted by the Japanese as a confession of weakness. Grew has since reaffirmed his belief that the war might have been ended earlier by this procedure.[134] Certainly there was a sharp slump in civilian morale in the wake of the fire blitz, as postwar opinion surveys clearly demonstrate,[135] and a renewed effort on the part of some officials to negotiate for peace.

As for the cost of the campaign to XXI Bomber Command, that had not been dear. In seventeen maximum-effort incendiary attacks, LeMay had dispatched 6,960 B-29's, carrying 41,592 tons of bombs. Losses had amounted to 136 B-29's, an average of 1.9 per cent of the sorties, a rate well under that suffered during earlier months and wholly acceptable according to conventional norms of strategic bombardment.[136] With augmented forces and moderate losses, LeMay had been able to supplement the incendiary raids with a renewed program of precision attacks and an extensive VLR mining campaign; these activities, and an extension of the fire tactics to lesser cities, will be described in the next chapter.

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CHAPTER 21

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THE ALL-OUT B-29 ATTACK

THE preoccupation of XXI Bomber Command with urban incendiary attacks and support of the Okinawa campaign during the spring of 1945 did not mean that LeMay had abandoned the concept of precision strikes against priority targets. After the March fire blitz had proved so successful, he had attempted to perfect a technique for night attacks against individual targets. "This experimentation," said a Washington spokesman for the Twentieth Air Force, "is primarily for the purpose of increasing our versatility, particularly during the bad weather periods that are fast approaching."[1] Weather was, indeed, the determining factor. It may seem strange, after the monotony of complaints about weather during the early months, to speak of bad periods approaching, but this observation was on the authority of meteorological statistics: normally, the summer monsoon was even more productive of clouds than the winter monsoon, and LeMay's weather section had estimated that the main target areas in Honshu could be attacked visually on only three days in the months of April and May, once in June.[2] The night precision technique was never perfected except for a special type of operations conducted by the 315th Wing, but the experimental mood continued and the command did achieve a versatility of attack that succeeded superbly in spite of Honshu's clouds.

The key to this success lay in the flexibility of target selection: on clear days multiple forces were sent out to bomb various targets visually; in cloudy weather radar attacks were conducted against urban areas. The development of this program was delayed by the Okinawa campaign, which, with the incendiary attacks on the principal cities, has already been described.* Concurrently with those activ-

* See above, chap. 20.

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ities, and subsequently, XXI Bomber Command was engaged in other operations; the complex program may be described under the following rubrics: 1) attacks against individual industrial targets (24 March to 14 August); 2) incendiary attacks on secondary urban areas (17 June to 14 August); 3) the oil campaign (26 June to 14 August); and 4) VLR mining operations (27 March to 14 August). To treat these topics separately is to lose all sense of the growing intensity of the B-29 effort as it was split between these several tasks, but such an approach makes it easier to understand the command's general objectives.

Industrial Targets

The experiment with night precision attacks was short-lived. It was suggested by Arnold who had been greatly impressed by night operations during the March blitz.[3] LeMay was willing to try the experiment: if successful, the tactics contemplated would go far toward making precision bombing independent of weather, and night bombing was more efficient than day in tonnage lifted and less costly in planes lost.[4] His first trial was a large one, a 251-plane mission against Mitsubishi-Nagoya on 24 March. In four daylight attacks this priority target had received only minor damage. For the night attacks, operational plans were based on a variation of the RAF pathfinder technique: 10 minutes before bombing time 10 B-29's were to light the engine works area with M26 flares; 5 minutes later another 10 B-29's would drop M17 incendiary clusters to start marker fires; then the main force was to attack with 500-pound GP's. Unfortunately, the crews found Nagoya covered with a deep stratocumulus cloud. The several formations came over with excellent timing but thereafter the attack fell apart. Cloud complicated the bomb run and, combined with smoke from the incendiaries, obscured the lights from the flares; some of the incendiaries fell outside the factory complex and bombardiers sighting on them were off target. Thus, though the attack with its 1,533 tons was the heaviest ever sent by the command against a single aircraft industry target, the results were negligible: only 60 tons of bombs fell in the factory area, damaging a few minor buildings and causing no appreciable loss in production.[5]

Still interested in the possibilities of night tactics, LeMay's operations officers realized that some more effective way of lighting the target would have to be devised. Because there was no agreement at

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the wing level as to the best procedure, LeMay decided to let O'Donnell and Storrie run single-wing missions, each trying his own technique. Storrie's attack on 30 March, obviously on an experimental scale, involved only 14 of the 314th Wing's planes—3 loaded with flares, 7 with 5 tons each of 500-pound GP's, and the last 4 with a mixed cargo of bombs and flares. In spite of the large ratio of flares carried, the twelve planes that got over Nagoya missed the Mitsubishi plant entirely.[6] The 73d's effort was larger but hardly more successful. On 1 April, O'Donnell sent against Nakajima-Musashi 121 B-29's, each topping off its bomb load with 4 flares. Of 1,019 tons dropped, only 4 hit in the area.[7]

Since none of the attempts had provided any positive evidence, LeMay ordered for the night of 3 April three one-wing attacks—against Mitsubishi's Shizuoka engine plant, Nakajima's Koizumi assembly plant, and the Tachikawa aircraft engine plant. Command headquarters specified the mean point of impact, bombing altitude, and bomb load; each wing was allowed to choose its own method of lighting the target. Again, the results in each instance were negligible.[8] The command just wasn't equipped for night precision bombing; specifically, it needed target marker bombs, such as the 1,000-pounders used by the RAF, and reflex optic bombsights. Lacking the proper equipment, LeMay abandoned the experiment.[9] For a while B-29's were kept busy enough with airfield strikes in support of the battle for Okinawa,* but between trips to Kyushu they were sent occasionally against the aircraft industry in daylight missions.

The first break came on 7 April when LeMay split his forces between the two top-listed targets. The 313th and 314th Wings went to Nagoya to unload 610.7 tons of high explosives on the Mitsubishi engine works. Bombing from about 20,500 feet in CAVU conditions, the bombardiers put on a brilliant demonstration of precision technique. Post-strike photos showed 62 per cent of the roof area destroyed, and actual damage was worse than was realized at the time.[10] After the war Japanese officials reported that this attack destroyed 90 per cent of the plant's facilities. Dispersal, induced by earlier raids, had already slowed production to 129 engines in March; in April only 15 were built and only 44 during the rest of the war.[11] After repeated failures at Nagoya, XXI Bomber Command had finally knocked out its second-listed target in a single mission.

* See above, pp. 627–35.

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The 73d Wing hit pay dirt, too. It had been banging away at Nakajima-Musashi since the first Tokyo raid without much effect. Weather had made the target hard to hit, and the 500-pound GP's used had been too light for the plant's modern buildings of steel and reinforced concrete. On the 7th, however, Tokyo's weather was as near perfect as Nagoya's and the 101 planes that bombed were loaded with newly arrived 2,000-pounders. About 26 per cent of the 490 tons dropped hit in the target area, doing heavy damage in the machine shops and destroying about 10 per cent of the plant's buildings. The same wing returned to Musashi on 12 April to finish up the job with 119 planes again loaded with 1-ton bombs. The aiming point was in the Tama section, untouched on the 7th. Because of a heavy haze, bombardiers had to make a radar run; they missed Tama but got sixty-four tons into the eastern section of the plant, causing heavy structural damage to 10 per cent of Musashi's buildings. Eleven B-29's, unable to bomb the primary, hit Mitsubishi's Shizuoka engine works, a new plant just coming into production, and damaged approximately 86 per cent of the roof area.[12]

These raids about finished Musashi. The command was to make an abortive attempt against it in June and to return on 8 August when lucrative targets were scarce, but both missions were superfluous. By 12 April the B-29's had staged eleven missions against this, the No. 1 target: four had failed entirely because of weather, and of the seven in which bombs were dropped, only the last two were more than moderately successful. It must have been somewhat embarrassing to the command that Task Force 58's low-level strike on 17 February had done more damage than any single VHB attack, but it was the cumulative effect of repeated blows that ruined the plant. Nakajima officials had long since abandoned any efforts at repair, concentrating on removing machine tools and equipment to dispersal areas. Production had fallen to 425 engines in March and now, after the April attacks, ceased entirely.[13]

On the last Musashi show 102 P-51's from VII Fighter Command had escorted the B-29's and had found plenty to do when about an equal force of Japanese defenders came up, damaging 36 of the bombers.[14] In hopes of drawing off some of Tokyo's interceptors, LeMay had sent on the same day a moderate force from the 313th and 314th Wings to Koriyama, 120 miles north of the capital. The planes

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severely damaged two chemical plants, Hodogaya and Koriyama, and an adjacent aluminum plant. The primary targets had been chosen because they produced tetraethyl lead, an essential component of aviation gasoline; actually, the oil shortage was so severe that these plants were part of a surplus production capacity and hence the good bombing was of little strategic consequence. Nor had the mission succeeded as a diversion: the enemy fighters refused to leave Tokyo, and only ten individual attacks were reported over Koriyama.[15]

On 24 April, with weather forecasts unfavorable for Kyushu and favorable for Tokyo, LeMay interrupted the ICEBERG support operations to run a mission against the Tachikawa plant of the Hitachi Aircraft Corporation. Located at Yamato, a few miles north of Tachikawa and nineteen miles from the Imperial Palace in Tokyo, the factory built radial engines for army planes. Production had averaged 250 engines per month in 1944, but in the early months of 1945 had slumped, partly because of a dispersed program, partly because of a carrier strike on 17 February. A force of 131 B-29's got over Tachikawa on the 24th to find the target obscured by haze, but 101 were able to bomb visually from 12,000 feet. The 473.5 tons of GP's dropped completely wrecked the plant; no effort was made thereafter to repair the damage and production stopped altogether. Going in without escort and at an unusually low altitude, the B-29's met stiff opposition from flak and fighters; four bombers were lost and sixty-eight damaged while their own gunners were registering claims of fourteen fighters destroyed and twenty-four probables.[16]

An attack against the Tachikawa Army Air Arsenal on 30 April was foiled by weather, though some of the planes were able to bomb the primary radar target, the Hamamatsu urban area.[17] This mission, and one sent out on 5 May against the Hiro Naval Aircraft Factory at Kure, were coordinated with Kyushu airfield strikes. In the Kure attack, the 73d Wing was joined by the 58th, which had recently moved from CBI and was now making its first Honshu strike from the Marianas. Attacking from about 20,000 feet, 148 B-29's dropped 578 tons of 2,000- and 1,000-pound bombs with devastating effect; many buildings and more than 500 machine tools were destroyed or damaged and production was cut almost in half.[18] On the 11th, LeMay sent a moderate force against the Konan plant of the Kawanishi Aircraft Company, an important manufacturer of airframes. Despite a

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4/10 cloud cover, the mission was highly successful: so heavy was the destruction that the company immediately removed almost all of the machine tools left.[19]

The Konan mission was run as a diversion for the last B-29 strikes against Kyushu airfields; on the same day, 11 May, Nimitz released XXI Bomber Command from support of ICEBERG. Arnold immediately reconfirmed current target directives, with the aircraft industry and the principal urban areas as the priority objectives.[20] With the two most important engine factories stilled, LeMay chose to concentrate on the great urban areas; his highly successful campaign, already described,* absorbed most of the command's energies from 14 May to 15 June, and except for an abortive mission against the Tachikawa Aircraft Company on 19 May,[21] no precision attacks were scheduled until 9 June. The success of the recent strikes, however, had shown that daylight missions could play an important role in an articulated program. In part, the improvement in bombing had resulted from better weather and from better forecasting. Crews had gained confidence from the occasional fighter escort and greater skill with lead-crew training and with combat experience. Finally, there was the change in tactics which had lowered the mean bombing altitude from 30,000 to 20,000 feet and at times sent bomber formations in much lower. This increased the danger both from enemy fighters and flak, but like LeMay's other calculated risks, it paid off in effectiveness without undue cost: of 1,433 B-29's airborne against industrial targets between 24 March and 19 May, only 20, or 1.3 per cent, were lost to all causes.[22]

While great formations of B-29's were burning out the six principal cities, LeMay's staff was working overtime on a coordinated plan for the cloudy period of late spring and summer. When radar weather was predicted, the command would run incendiary missions against secondary industrial cities; when visible conditions were predicted, daylight precision missions would be dispatched against priority targets, most of them connected with the aircraft industry. Neither the industrial targets nor the urban areas were of a size to demand a maximum force; hence, the policy was to name for any strike day a number of targets with a separate force assigned to each. This system of multiple targets allowed the command to take full advantage of any good weather areas, but for success it required much study of routes,

* See above, pp. 635–44.

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forces required, bomb types, and altitudes and a careful coordination with weather services.[23] This so-called "Empire Plan" was to govern most of the command's bombing until the end of the war.

The plan went into operation on 9 June when, with good weather predicted, LeMay used three small formations. Two groups hit the Kawanishi Aircraft Company's plant at Narao, an important source of navy planes; the 1,000-pound bombs did so much damage that virtually all surviving machine tools were dispersed to other locations. Two groups heavily damaged Aichi's Atsuta factory, although only 4 bombs hit in the target area: they were 4,000-pound light-case projectiles and 1 touched off a devastating fire. A single group, sent against Kawasaki's plant at Akashi, found the area covered with 9/10 cloud and, releasing by radar, put its 2-tonners into the village instead of the factory.[24]

Good weather was promised for the 10th also, so LeMay named six Empire targets. He sent the 73d Wing back briefed to dump 2,000-pounders on ruined Nakajima-Musashi, and single-group formations against Nakajima plants at Ogikubu and Omiya, Japan Aircraft Company at Tomioka, Hitachi at Chiba, and the Tachikawa Army Air Arsenal. Weather in the Tokyo Bay area, where all the targets were located, proved variable. Nakajima's luck held: its three factories were cloud-covered and formations assigned to them bombed instead primary radar targets, doing heavy damage to the Hitachi engineering works at Kaigan and a seaplane base at Kasumigaura. Against the other targets, bombing was visual and quite effective in each case. VII Fighter Command provided an escort of 107 P-51's.[25]

Again on 22 June there were six targets, this time in southern Honshu. Kure Naval Arsenal was assigned six groups and the other targets, all aircraft factories, forces ranging from one to four groups. In all, 446 B-29's were airborne and 382 bombed, dropping 2,103 tons of bombs.[26] Post-strike photos showed 72 per cent of the roof area at the Kure arsenal damaged.[27] No analysis of the results at Mitsubishi's Kagamigahara plant is available, but postwar investigations showed varying degrees of destruction elsewhere: only slight damage at Kawasaki's works at the same town;[28] at Kawanishi's Himeji plant, great destruction among the buildings and total destruction of machine tools;[29] at Mitsubishi-Mizushima, 135 of 231 machine tools and almost half the roof area destroyed, drastically curtailing production of Betty bombers and George fighters;[30] at Kawasaki-Akashi, where

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the extent of damage done on 19 January was not fully appreciated, the empty buildings were completely destroyed.[31]

On 26 June LeMay sent out nine formations against southern Honshu and Shikoku targets, with a total force of 510 B-29's and an escort of 148 P-51's. Good weather was predicted but heavy clouds over much of the area made assembly difficult and many of the planes bombed targets of opportunity individually or in small flights.[32] Damage for those targets where assessment is available (aircraft factories, light-metals industries, and arsenals) varied from light at Aichi's Eitoku plant (already hit heavily) to unnecessarily severe at Kawasaki-Akashi, where well-placed 4,000-pound bombs served only to whip a dead dog.[33] At Kawasaki's Kagamigahara plant, however, the slight damage done on the 22d was so greatly increased that every important building was knocked out.[34]

The weather had held up somewhat better than had been expected, allowing five daylight missions in April, three in May, four in June. Thereafter almost a month passed before visual conditions again obtained. On 24 July the command put up 625 planes, directed against 7 targets in the Nagoya and Osaka areas. The attacks were coordinated with a two-day carrier strike in the Inland Sea region. Targets for the B-29's were chosen to give the several formations a wide choice according to local conditions, but in each case the force assigned was considered heavy enough to destroy its primary target.[35] Weather turned out spotty; 26 aircraft dropped 166 tons on targets of opportunity and 573 dropped 3,539 tons on primary visual or radar targets.[36] The Sumitoma Metal Company's propeller factory, whence most of the machine tools had been removed, was completely wrecked.[37] Kawanishi's Takarazuka plant lost most of its buildings and no effort was made subsequently to repair them.[38] The Osaka arsenal, though cloud-covered and attacked by only part of the assigned force, suffered additional damage amounting to 10 per cent of the original roof area.[39] Aichi at Eitoku sustained its heaviest damage of the war, damage which was superfluous because of previous dispersal.[40] Nakajima at Handa, struck for the first time, lost its principal assembly buildings, but the attack came too late in the war to have much direct effect on production.[41]

This fifth Empire attack was the last. Two weeks of cloudy weather followed, then the atomic bomb attacks against Hiroshima and Nagasaki ushered in a last spasm of precision strikes in an effort

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to end the war quickly and, one might suppose, to end it with conventional bombardment methods. XXI Bomber Command had brought its daylight tactics to a state of high efficiency,[42] but the favorable opportunities had been rare and the individual targets were of diminishing importance; in the meantime, the B-29's had carried to some fifty-odd of Japan's medium-sized cities the same incendiary tactics that had ruined the greater industrial centers.

Incendiary Attacks on the Smaller Cities

The incendiary campaign begun by XXI Bomber Command in mid-May was based on a Joint Target Group study of 28 March, which listed thirty-three urban areas concentrated in eight of Japan's largest cities.* One, Yawata, was not hit; as the others were reduced to cinders in successive raids, it became increasingly obvious that the same tactics should be applied to the smaller cities: the efficiency and light cost of the night raids and the weather outlook were convincing arguments. LeMay's A-2, Col. James D. Garcia, stressing the importance of cumulative effects of raids compressed within a short period of time, recommended a systematic attack on medium-sized cities now that there was "a possibility of achieving a decisive effect with air power."[43] His choice of preferred targets was based on the following factors: 1) congestion and inflammability; 2) incidence of war industry; 3) incidence of transportation facilities; 4) size and population; and 5) adaptability to radar bombing. The list of 25 cities, with populations ranging from 323,200 (Fukuoka) to 62,280 (Hachioji) was merely a tentative one but it served well enough to get the campaign under way: of the first 15 targets struck, 13 were from Garcia's selection and eventually all but 5 were hit. His estimate of forces required —"an educated guess" in advance of photo reconnaissance—was about double what was actually used, and as the original targets were quickly scratched, others were added until by 14 August fifty-eight towns had been fire-bombed.

On 16 June, the day after the last incendiary attack against the major cities, LeMay alerted his wing commanders: the new program would begin next night with four one-wing attacks according to the following assignments—Omuta, 58th Wing; Hamamatsu, 73d; Yokkaichi, 313th; Kagoshima, 314th.[44] The cities, all in the 100,000-to-200,000-population bracket, were relatively congested; all had war

* See above, pp. 624–25.

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industries and each was a transportation center: Omuta and Kagoshima were ports on Kyushu, Yokkaichi on Honshu, and Hamamatsu was a rail point on the main Tokyo-Nagoya line.[45]

Except for the use of multiple targets the mission of 17 June was run off pretty much like those against the major cities. The planes were loaded with the familiar combination of M47 and M69 incendiaries and attacked by radar at altitudes between 7,000 and 9,200 feet, with pathfinders marking the targets. Enemy opposition, expected to be weak, was almost nil—the only loss suffered was chalked up to unknown causes. The ratio of effective sorties, 456 out of 477, was high and the total weight of bombs dropped, 3,058 tons, was heavy. Omuta received the heaviest attack but suffered least, with a destroyed area of .217 square miles, only 4.1 per cent of the city's area. The results elsewhere were much more satisfactory: at Kagoshima, 2.15 square miles, or 44.1 per cent, destroyed; at Hamamatsu, 2.44 square miles, or 70 per cent; at Yokkaichi (where only three groups were sent), 1.23 square miles, or 60 per cent. The total area burned out, 6.037 square miles, was considerably better than the average results achieved by 4-wing missions against a single city, and as usual, some numbered industrial targets were damaged in the general fires.[46]

The success of the first multiple-target mission insured the continuance of the program, and the operational pattern established on 17 June became standard during the remaining weeks of the war. Whenever a force of B-29's was ready to go and radar conditions were predicted, a night incendiary mission was scheduled. Targets for a particular night were based on operational considerations—weather, radar, and relative position of the several towns—as well as on data furnished by intelligence reports. As the campaign progressed and the available targets became smaller and of less significance, it became increasingly difficult to calculate accurately the proper type and weight of bombs required for each, which put an additional strain on intelligence and operations personnel in command, wing, and group headquarters.[47]

On strike nights XXI Bomber Command usually attacked four cities, with one wing assigned to each. Occasionally, target cities were considered large enough to require two wings (Fukuoka, 19 June, and Omuta, 26 July), in which case only three cities would be named.[48] Conversely, as the choice of worth-while targets narrowed, smaller

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forces were sent against more towns.[49] Sometimes the 315th Wing's night strikes against the oil industry* were integrated with the incendiary attacks and, near the end of the war, day and night missions were coordinated in a furious round-the-clock effort to bring the enemy to surrender.[50]

In all, multiple incendiary attacks were sent out on sixteen occasions, an average of two a week. During that period, the main weight of B-29 attacks was directed against urban areas, as it had been, except during the Okinawa campaign, since the March fire blitz: between 9 March and 14 August about 70 per cent of the bombs loaded were expended in incendiary raids, about 22 per cent in precision attacks. After 17 June, 8,014 sorties, with a total of 54,184 tons of incendiaries, were sent against 58 secondary cities.[51] Because of the similarity of the methods used and the large number of attacks, it is more convenient to summarize the results of the missions in tabular form† than to describe them individually. One urban area attack, however, differed sharply from the others in technique.

Yawata, center of Japan's steel industry, had been the target of two B-29 attacks from Chengtu, neither successful, and had long been carried by XXI Bomber Command on its priority list.‡ Because of its layout the city offered a poor target for radar bombing and had been marked for a daylight mission. Yawata was probably the most important industrial city left when, after the atom-bomb attack on Hiroshima, a strike was scheduled for 8 August. Eleven groups drawn from three wings were dispatched, carrying a mixed load of incendiaries. Although visual conditions had been forecast, the crews found heavy clouds over Yawata; smoke from fires started by the first-comers further obscured the target and 136 of the 221 planes bombing did so by radar. Results were considered only fair: 1.22 square miles were burned out, 21 per cent of the urban area and 33 per cent of the planned target area.[52] Because fighter defense in the Yawata area was considered strong, the mission was escorted by three groups of P-47's from the 301st Fighter Wing on Ie Shima. The Japanese were up in force and though the P-47's knocked off a dozen or so, the enemy destroyed one B-29 and five U.S. fighters.[53]

The Yawata mission, in spite of the force involved, was less suc-

* See below, pp. 658–61.
† See below, Table 1, pp. 674–75.
‡ See above, pp. 624–25.

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cessful than the average incendiary attack and more costly. The Japanese air forces never devised an effective defense against night attacks; they had no first-rate night fighter and no efficient means of vectoring in the interceptors they sent up. Though B-29 crews could expect to meet some enemy planes on any night mission, they were never jumped by a large force, and such passes as were made were neither aggressive nor well coordinated. The big cities were defended by heavy AA guns working with searchlights but not the smaller towns,[54] so that combat losses in the night raids against the latter were unbelievably low. Only one B-29 was known to have been destroyed by enemy action in the whole campaign, a Superfort attacked by three Japanese fighters over Omuta on 26 July.[55] Flak and fighters damaged sixty-six others, but the remaining eighteen losses were chalked up to operational or unknown causes.[56]

The feebleness of enemy opposition led LeMay to try another tactical innovation that was less dangerous in reality than in appearance. To increase the psychological effect of his wide-ranging B-29's, he decided literally to call his shots, warning about a dozen cities of an impending attack and then actually hitting four of them. Such a warning, delivered by leaflets, would be a grand gesture of confidence and might lessen the stigma attached to area bombing.[57] Nimitz' psychological warfare section approved the project and preparations were made to drop leaflets before an incendiary mission scheduled for 28 July. Three Japanese officers, prisoners of war, volunteered to translate the text, which developed the theme that "in accordance with America's well-known humanitarian principles, the American Air Force, which does not wish to injure innocent people, now gives you warning to evacuate the cities named and save your lives." OWI's printing presses on Saipan ran off the 660,000 copies required.[58] They were crammed into M26 bomb cases, 10,000 to the case, and on the night of the 27th, 6 B-29's dumped them over 11 cities: Aomori, Tsu, Ichinomiya, Uji-Yamada, Ogaki, Uwajima, Nishinomiya, Kurume, Nagaoka, Koriyama, and Hakodate. Next night the command bombed the first six cities in that list, and although the enemy made some show of opposition, the forty or fifty fighters that rose shot down no B-29; they damaged only six and flak, five more.[59] Even with advance warning the Japanese opposition was feeble, and LeMay used leaflets with the same impunity on 1 and 4 August; radio broadcasts from Saipan carried a similar warning. The stratagem came too late

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to reach the whole of the civilian population, but it came at a time when every additional pressure was important, and according to morale surveys made soon after the surrender the announcements achieved a wide circulation and a considerable effect, both in causing residents of the proscribed towns to move and in persuading them of the good intention of the Americans. A high Japanese official later characterized the warnings as "a very clever piece of psychological warfare, as people in the affected regions got extremely nervous and lost what faith they still had in the Army's ability to defend the mainland."[60]

In general the incendiary attacks on the smaller cities were highly successful. On 12 July, because of operational difficulties, Uwajima and Ichinomiya were only slightly damaged and the command had to stage repeat visits on the 28th;[61] for similar reasons Omuta was attacked twice, on 17 June and 26 July.[62] But in all other cases one strike was enough, if not to destroy the town at least to scratch it as a profitable target. The burnt-out areas ran to 43 per cent of the total built-up area of the cities and in the case of Toyama to the fantastic figure of 99.5 per cent.[63] In area destroyed per 1,000 tons of bombs expended, the attacks from 17 June to 14 August were not as destructive as those against the great cities, but that was to be expected because of the physical layout of the medium-sized urban centers.[64]

The economic effects of the incendiary attacks are harder to evaluate than the physical, and it is impossible sharply to differentiate in the over-all picture between the results of the raids against the greater and the smaller cities. The best guide to the problem is a study made by the U.S. Strategic Bombing Survey after the war. In spite of an increasing shortage of raw materials, Japanese war production increased during 1944, reaching a peak in such important items as aircraft, metals, and ordnance in October, just before the first B-29 raids from the Marianas. The decline thereafter was not wholly attributable directly to air attacks: the blockade and inefficient dispersal—itself brought on by fear of air attacks—would have reduced the production rate without bomb damage. But sampling processes and the existence of a few unbombed cities which could be used as controls made possible some quantitative judgments. In urban areas not bombed, production decreased only slightly after October 1944: at Hiroshima it stood in July 1945 at 83 per cent of the peak, and in six unbombed cities on Hokkaido at 93 per cent in June. Yet by July production in

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the bombed cities surveyed had fallen to 33 per cent of the peak; even in factories not themselves hit but located in those cities the output had declined to 51 per cent of the October rate.[65]

In the small cities, as in the large, the area attacks worked vast hardships upon the Japanese people. Statistics of dead, wounded, and homeless tell little about the personal sufferings, nor about the dislocation which occurred as thousands fled the towns. The effect of this dispersal on industry, as had been expected by air planners, was great. So also was the effect on morale, as the terror which had earlier been confined to a few great cities was spread throughout the country. In a report on the effects of urban area bombing submitted in December 1945, a group from the faculty of the Imperial University of Tokyo wrote that "with the shifting of the attacks from cities to local districts, the people became concerned over the future of the war. In consequence, their fighting morale was weakened."[66]

Attacks on the Oil Industry

In the program of coordinated strikes begun in June, ultimate choice between Empire Plan or urban industrial targets was determined by weather. As the program got under way, the 315th Bombardment Wing (VH) became available for combat, and its operations, in some measure independent of those of the other wings, were dictated largely by the special equipment of its units.

The 315th Wing, authorized in December 1944 for deployment in the Pacific, settled at Northwest Field, Guam, during May and June; its commander, Brig. Gen. Frank A. Armstrong, Jr., was a veteran of the strategic air offensive against Germany.[67] The wing's B-29's differed in two important respects from those of other units. They were equipped with the AN/APQ-7 (Eagle) radar instead of the conventional AN/APQ-13. The latter had been designed primarily as a navigational aid, and though crews had improved with experience in their use of it for night or bad-weather bombing, it was not an instrument of precision. The Eagle radar, developed for bombing, possessed a much greater degree of definition, and though it required a long bomb run (average, seventy miles), that was no serious handicap in the present tactical situation in Japan. The Superforts had been stripped of all armament except the tail gun; this modification and the Eagle radar marked the 315th as a night-bombing outfit.[68] There had been several proposals for use of the specially equipped B-29's:

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for very high-altitude bombing, for area bombing, and for aerial mining.[69] Before the 315th Wing was combat-ready, however, the 313th had become proficient in mining, and all the wings in area bombing, with the AN/APQ-13. Unit training for the 315th had stressed night radar tactics to the neglect of visual bombing and daylight formation flights, and it was obvious that if the Eagle radar was to be given a scientific test, it should be against a discrete set of targets —preferably large in size and located along the coast line.[70] In the estimation of XXI Bomber Command, the oil industry met these requirements.

As a target system, that industry differed sharply from its counterpart in Europe, though there was one fundamental similarity: Japan, like Germany, was dependent on imports for its petroleum. Homeland wells had produced only 2,470,000 barrels in the peak year, 1937, and only 1,941,000 (less than 0.1 per cent of the world's total) in 1941. During the 1930's, the war lords had built up a backlog of 55,000,000 barrels by extensive importation and severe restrictions on civilian use, but by Pearl Harbor heavy consumption and the U.S. embargo had reduced the stock to 43,000,000 barrels. The need for oil had been the main incentive for Japan's drive southward, and her quick success in the Netherlands East Indies had gained for a while a ready access to petroleum and its refined products, just as Germany's drive into southeast Europe had given Hitler control of fields in Rumania and Hungary. But whereas Germany could depend for imports on a complex transportation system, rail and barge, which was long proof against Allied attack, Japan had to depend on shipping and had begun the war with inadequate tonnage in tankers. The immediate demands of the war consumed much of her newly gained production, and the Allies took an ever increasing toll of shipping in attacks by submarines and carrier- and land-based planes. By August of 1943 oil shipments from the south had begun to decline, and as the Allied forces moved northwestward into the Marianas and Philippines, the flow decreased sharply. There had been no opportunity to build up sufficient reserves at home, nor had Japan the raw materials, plant capacity, or technological skill to build a synthetic oil industry equal to that which had served Germany after the loss of her stolen Balkan wells. The Japanese made desperate efforts early in 1945 to improvise a synthetic industry—including a fanciful pine-root oil project—but it was too late and too little.[71]

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Much of this decline in the oil industry and stock in the home islands had preceded the first VHB missions; the COA in its reports of November 1943 and October 1944* preferred attacks on shipping to direct strikes against oil installations as a method of increasing the stringency in Japan, and the JTG had never listed the industry as a primary target objective. When the flow of oil into Japan ceased entirely in April 1945, the only B-29 attacks on the industry had been by XX Bomber Command: a mission against Palembang in the previous August and some strikes against storage dumps in the Singapore region early in 1945.†

By April, however, AAF intelligence had come to the opinion that the petroleum industry in Japan was in so critical a state that the destruction of facilities and stores would react immediately upon the tactical situation.[72] Consequently, LeMay and Lt. Gen. Barney M. Giles, who came to Guam as the deputy commander of the Twentieth Air Force, eventually decided that during its combat-testing period the 315th Wing would devote its efforts exclusively to oil targets.[73] This decision had the enthusiastic indorsement of Gen. Carl Spaatz, slated to command all B-29's under USASTAF, who had been an ardent advocate of the oil campaign in the ETO.[74]

Actually, the attacks had begun before the 315th Wing was ready for combat. The first came on 10 May and was considered, by Nimitz as well as LeMay, as a blow in direct support of the Okinawa battle.[75] It was a three-pronged strike, with the 73d Wing hitting the Third Naval Depot at Tokuyama; the 314th, the Iwakuni Army Fuel Depot; and the 58th, oil storage installations at Oshima. Most of the planes bombed visually and each attack was successful; damage ranged from 20 per cent at Tokuyama to 90 per cent at Oshima and would have been heavier had it not been for the lack of oil in many tanks and pipes.[76] On 22 June, six B-29's of the 313th Wing, unable to find their primary target, dropped seventeen 4,000-pound bombs on the Second Naval Fuel Depot at Yokkaichi, damaging about 15 per cent of the plant.[77] Besides these storage areas, several refineries were hit by one or another of these wings, incidentally in area attacks or as targets of opportunity.

The 315th Wing opened its specialized campaign on 26 June with

* See above, pp. 26–28, 132–34.
† See above, pp. 107–10, 163–64.

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a strike against the Utsube Oil Refinery at Yokkaichi, the top-priority target. By 14 August the wing had run fifteen missions against ten targets, petroleum refineries or synthetic plants, which included besides the first: Maruzen Oil Company at Wakayama; Mitsubishi Oil Company at Kawasaki; Nippon Oil Company plants at Akita, Kansai, Kudamatsu, and Amagasaki; Imperial Fuel Industry Company at Ube; and Toa Fuel Industry at Wakayama.[78] In all, the 315th Wing dispatched 1,200 planes, of which 1,095 bombed primary targets, dropping 9,084 tons of 500-pound GP's, the bomb considered most effective against the scattered installations attacked. The very heavy bomb load lifted was possible because the planes were stripped and bombed individually at night; with experience, the crews were able to increase the weight carried from an average of 14,631 pounds on the first mission to 20,684 on 9 August. Removing most of the guns did not prove too dangerous: only four planes were lost and sixty-six damaged during the entire campaign.[79]

On the whole, the experiment was markedly successful. The formations were able to attack the primary target on every mission, and while the results varied they were generally good. On most missions, General Armstrong sent a two-group force, and releasing at low or medium levels, bombardiers were able to get enough bombs into the target area to do substantial damage. In some cases it was necessary to return a second or even a third time, but by the end of the war most of the plants were completely or largely inoperable. USSBS statisticians calculated that 315th Wing bombardiers had achieved an accuracy rate of 13.5 per cent, as compared with 5.4 per cent achieved, under more difficult tactical conditions, with the Eagle radar in Europe.[80]

If more accurate, however, XXI Bomber Command's campaign was much less important than that in Europe. The Twentieth Air Force estimated that B-29 attacks had destroyed about 6,000,000 barrels of tank-storage capacity, USSBS that they had reduced Japan's refining capacity from 90,000 barrels a day (in December 1941) to about 17,000 barrels.[81] The strategic effects were more apparent than real, however, because many of the storage tanks were empty and refinery production had fallen to only 4 per cent of capacity before the VHB campaign began.[82] The lack of precise intelligence on the state of Japan's economy justified the effort spent on the oil program, a sort

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of reinsurance policy, but the blockade had dried up the nation's oil resources so that tankers lay idle at the docks. Other B-29's, however, had contributed importantly if tardily to that blockade.

Mining Operations

At the beginning of World War II, neither the Navy nor the AAF was keenly interested in the use of the mine as a strategic offensive weapon and consequently there was a serious lag in the mining program, both in the development of new weapons and in their employment. Indifference was gradually overcome, partly through the missionary work of enthusiasts in the Navy's Mine Warfare Section, partly through the influence of the British, who had been engaged in mining and countermeasures since 1939. Japan's island position, with her dependence upon sea transportation both for vital imports and for supplying military outposts, made the nation particularly vulnerable to mining operations; distances in the Pacific made it most efficient to deliver the mines by aircraft. There was thus during 1943 and 1944 an increasing use of aerial mines in the Pacific Ocean Areas and in CBI, either in connection with specific amphibious operations or as a campaign of attrition. As the westward drive of U.S. forces emplaced them within VLR striking distance of Japan, it was natural that the B-29 should be considered as a mining instrument.[83]

Most of the initiative in this respect came from the Navy, which recognized the superiority of the heavy land-based bomber over carrier or amphibious aircraft for a sustained mining campaign but which lacked the proper equipment. Navy agencies in Washington had argued early in 1944 for the use of XX Bomber Command B-29's for mining and CINCPOA was even more insistent. On 6 July, when the advanced echelon of XXI Bomber Command was passing through Pearl Harbor en route to Saipan, Nimitz' staff tried to sell the idea of a VHB mining campaign against Japan's home waters, with the command furnishing the B-29's and crews, CINCPOA the mines and technicians.[84] The advanced echelon officers, of course, were unable to act on the suggestion, but Navy staffs continued to urge the campaign, preparing detailed operational and logistical plans for cooperation with the Twentieth Air Force.[85] These were referred to the COA, currently engaged in revising its report on strategic targets in the Pacific.[86] In both its over-all report (10 October) and a special subcommittee report on shipping (20 October), the COA reviewed

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the possibility of a mining campaign.* In the latter paper particularly the committee agreed with the Navy's point of view: the Allied blockade had already forced the Japanese to funnel most of its shipping through the Inland Sea and the spout of the funnel, the Shimonoseki Strait, could be plugged with aerial mines. Operations on the scale suggested by the Mine Warfare Section, the COA agreed, would force the Japanese to abandon the outer zone by August 1945 and would weaken the defense of the home islands. The proposed schedule, based on estimates of availability of mines and capabilities of the B-29 force, was as follows:[87]

	Period	*Sorties Per Month*	*Mines Per Month*	*Type of Mines*
Phase I	Dec. 1944	405	1,500	Magnetic
Phase II	Jan.–Mar. 1945	590	2,100	80% Acoustic 20% Magnetic
Phase III	Apr.–Aug. 1945	540	1,400	60% "Unsweepable" 20% Acoustic 20% Magnetic

Arnold's staff greeted the proposal without enthusiasm. Kuter, his top planner, pointed out that only ten days earlier the COA's revised report had listed as priority targets for the B-29's the aircraft industry, urban areas, and shipping—in that order. To divert a sizable part of the VHB effort to mining—405 of a total of 500 projected sorties in December—would make it impossible for the Twentieth to perform its primary mission, and hence mining on a large scale must await the build-up of forces in the Marianas.[88] Actually, the COA report of 10 October had contained two alternative sets of recommendations; in one, predicated on the supposition that Japan could be defeated without an invasion, mining had been listed in top priority for the B-29's. The strategy currently accepted, however, included an invasion, and within Norstad's staff the COA proposal was characterized as "another hope for a relatively painless method of winning the war," a slow process that might require two years. Extensive mining should be delayed until after the aircraft industry was knocked out and should be tried then only if a complete blockade seemed feasible and preferable to any other target system.[89]

Nimitz nevertheless continued to press for an early commitment of B-29's, asking Arnold to assign to mining 150 sorties per month be-

* See above, pp. 133, 552.

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ginning in January and a heavier effort beginning in April.[90] This request was more modest than the earlier proposal, but it still would have handicapped XXI Bomber Command's program of precision bombing during the "good weather" months of winter, and hence Arnold demurred in a letter of 28 November, promising aid when the command's forces were larger and the weather was less suitable for daylight missions.[91] This was not mere temporizing; if not enthusiastic about the project, Arnold was determined to give it a try. Harmon, apparently more sympathetic to Nimitz' plan, learned of Arnold's delayed acceptance and on 13 December alerted Hansell.[92] Hansell, busy with his precision attacks, protested vainly: on 22 December he received from Arnold an order to initiate planning for mining operations as requested by Nimitz, but beginning on 1 April rather than 1 January.[93]

The AAF thus embarked on a B-29 mining program, grudgingly, because the Navy lacked aircraft suitable for a Navy job; the situation was not wholly unlike that which had taken the AAF into antisubmarine work in 1941.* Evidently the air planners did not envisage the extraordinary success that was to follow, but it is questionable whether they could have acted differently if they had. Like the Navy advocates of a blockade, they hoped to win the war without an invasion; their weapon and their doctrine had been conceived in terms of an attack on industrial targets, however, and in their view any sustained air operations over Japan, bombing or mining, demanded first the destruction of the sources of Japan's air power. This had been the experience in Germany, and the opposition to Nimitz came, it must be realized, when the overworked 73d Bombardment Wing was taking heavy losses. To have inaugurated mining in January would have disrupted the bombardment program, as yet unsuccessful but going through a necessary period of adjustment, and in objecting to this Hansell and Arnold's office were not unreasonable. Yet in light of the spectacular results of B-29 mining operations later, it is ironical that the decision to cooperate with Nimitz came not from any great liking in the AAF for mining but rather from the sort of logic that often colored interservice comity during the war—the fear that otherwise the AAF might allow "a possible major usage of long-range aircraft to develop, by default, into a matter of special interest to the Navy."[94]

* See Vol. I, Chap. 15.

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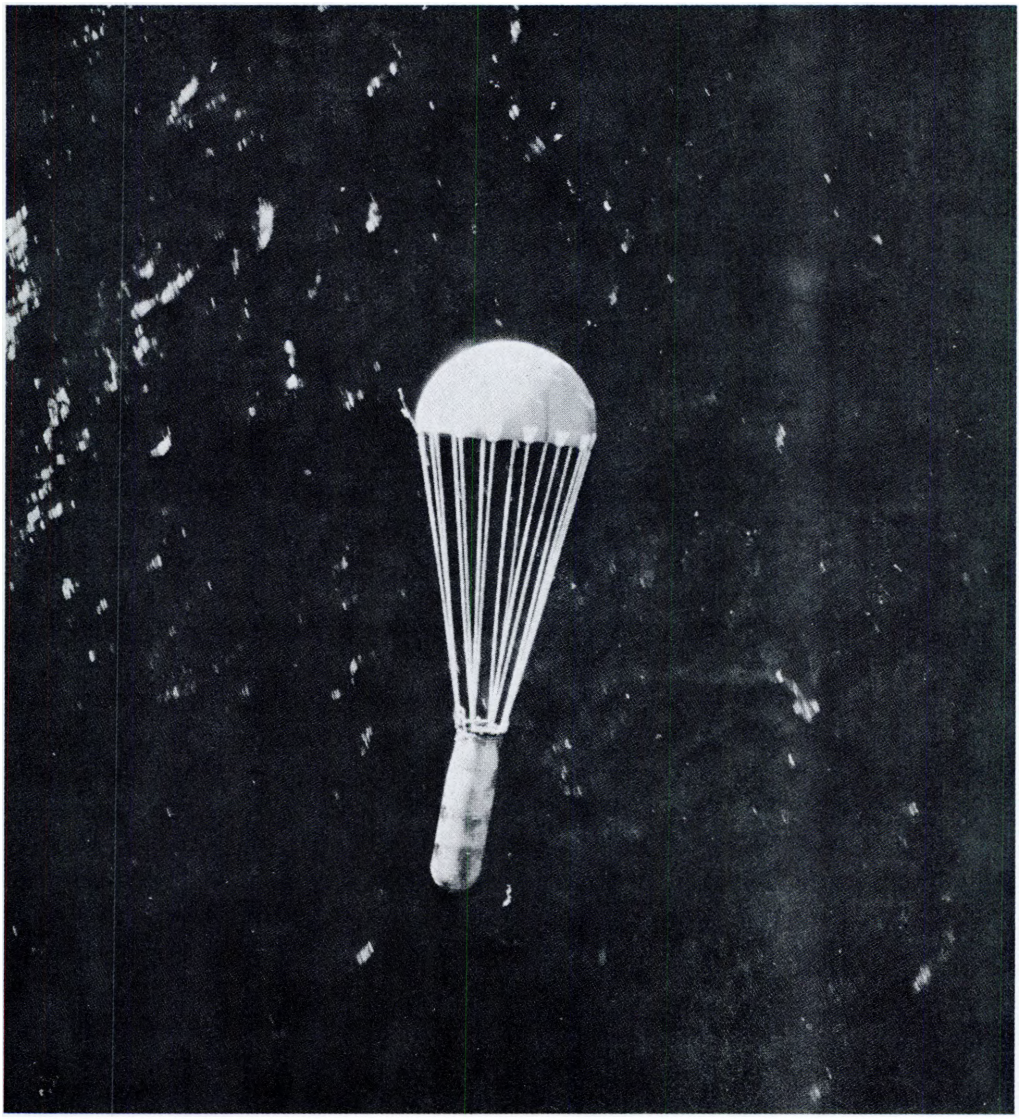

M26 MINE DROPPED BY B-29

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OKINAWA: MOTOBU AIRFIELD

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Hansell and Arnold's staff in Washington hoped to fulfill their obligation with a single B-29 group, perhaps even a reinforced squadron.[95] Harmon was more realistic in his estimate,[96] and LeMay, who replaced Hansell in mid-January, soon agreed that a larger force would be needed. His plan, submitted on 26 January, called for 1,500 mines to be laid in April and for an entire wing to be used—though not exclusively—in the project.[97] LeMay selected the 313th Bombardment Wing (VH), then establishing itself at North Field, Tinian. Its planes were equipped with the AN/APQ-13 radar, suitable for the task at hand, and minor modifications to provide anchorage for parachute static lines could be done locally. Training, which began in February, consisted of indoctrination in the theory of aerial mining and a series of four to eight practice flights involving five radar approaches each, with a couple of mine drops on the last flight.[98]

Tactics, as they were worked out in command and wing headquarters, were influenced by considerations similar to those which had shaped incendiary tactics and by the experience of XX Bomber Command in CBI. Daylight missions were rejected because they would entail high-altitude formation flights, expensive in fuel and with parachuted mines generally inaccurate even on clear days. The decision was for individual approaches at night with a radar release; this technique would be safer, more accurate, less dependent upon weather, and far more efficient in terms of useful load. To increase the lift potential, LeMay removed from the B-29's .50-caliber ammunition and two crewmen.[99]

The Navy, as it had promised, provided technical assistance and logistical support, gearing its production and shipping programs to meet the 313th Wing's requirements.[100] Channels were fairly complicated: the wing's requests went up through XXI Bomber Command and the Navy's Commander Forward Area, who was in charge of ammunition storage and allocation of shipping, to the higher Navy echelons. Though complex, this system worked fairly well in routine logistical support and in emergency calls for materiel, personnel, and technical assistance; such shortages in mine types as occurred were attributable to slow production rather than to theater red tape. Mines were prepared, tested, and stored on Tinian by the Navy's Mine Assembly Depot No. 4. The 313th Wing transported the mines to its own area, installed parachutes and other flight gear, and through a specialized unit designed modifications to meet immediate tactical

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needs. The command was fortunate in having as mining officers Capt. G. A. Grossman, an early convert who had been connected with the course in aerial mining at the tactical school at Orlando, and Cdre. Ellis A. Johnson, USN.[101]

LeMay's operational plan, as he described it in a directive to the 313th Wing on 23 January, was conceived as a four-phase program: 1) 15 February to 15 March, training; 2) 16 to 31 March, partial blockade with standard mines; 3) 1 April to 31 May, complete blockade with new-type mines; and 4) 1 June and after, "further mining."[102] His target list, based on Navy studies, was in the following order of priorities: Shimonoseki, Bisan Seto, Kobe-Osaka, Hiroshima-Kure, Sasebo, Nagasaki, Nagoya, Tokyo-Yokohama, Yokosuka, Tokuyama, and Shimizu.[103] This program Arnold approved, but Norstad made it clear that the commitment to mining was an experimental one which should not be allowed to interfere with established bombardment policies, as some in Washington feared might happen.[104] In spite of these misgivings in Arnold's headquarters, LeMay went on with his preparations and on 11 March ordered the 313th Wing to execute its first two mining missions, coded appropriately STARVATION I and II, between 22 and 27 March; later the dates were postponed to between 27 March and 1 April.[105] The target was the Shimonoseki Strait, always an important thoroughfare but at the end of March, for reasons that may be described briefly, certainly the most important shipping center in the Empire.

Japan had entered the war with about 6,000,000 tons of shipping, to which 823,000 were added by seizures during the early conquests. This sizable merchant marine was divided about equally between the army, navy, and civilian pools; the lack of a common control made for inefficient employment, and the failure of a plan to return needed tonnage to civilian use put a continuing burden on Japanese industry. Long-range shipbuilding programs and facilities were grossly inadequate for a major war, and no provision had been made for a convoy system; consequently, Japan was wholly unprepared for the Allied attacks on shipping which began immediately after Pearl Harbor. Even in 1942, sinkings exceeded replacements and thereafter the net losses increased in spite of redoubled efforts in the shipyards (which produced by V-J Day 4,100,000 tons of ships) and in spite of the establishment of convoy routes. Until late in the war, and for the whole of the war, the submarine was the chief killer, but it was ably

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seconded and made more effective by Navy, AAF, and Marine planes. The steady war of attrition was punctuated by especially heavy losses inflicted during the amphibious campaigns and the great carrier strikes which began in 1944. As early as December 1943 the Japanese started closing down convoy routes; by the following September they had abandoned regular contact with the South and Southwest Pacific and the mandated islands. The Philippines campaign produced a crisis, destroying 1,300,000 tons of shipping and threatening the routes southward to the Indies. The capture of Iwo Jima and the imminent assault upon Okinawa completed the stoppage of regular traffic to the south: harbors on Tokyo and Ise bays became less active and the convoy routes southward from Kyushu to Formosa to Singapore were given up. By March 1945, according to Japanese sources, thirty-five out of forty-seven regular convoy routes had been closed down; an additional burden had been put, where possible, on Japan's inadequate rail system, and traffic between the home islands and the Outer Zone was confined to the Yellow Sea, the Tsushima Strait, and the Sea of Japan. This situation enhanced the importance of ports on the Asiatic side of Kyushu and Honshu and in the Inland Sea, a sheltered natural canal which had long been the vital central link in Japan's transportation system. The southern entrances into the Pacific at either end of Shikoku were no longer used, and the great bulk of Japanese shipping passed through the eastern narrows, Shimonoseki Strait.[106]

This was the strategic situation that had determined priorities in LeMay's target list. At the end of March, Shimonoseki had also a tactical importance. The assault on Okinawa was set for 1 April, and mining the strait would block the flow of reinforcements and supplies and would restrict the movements of the remnants of the Japanese fleet. To close the strait, LeMay expected to use 1,500 mines. Brig. Gen. John H. Davies, commanding the 313th Wing, set up the first attack for the night of 27 March with 3 formations totaling 105 B-29's; planes were to go in singly, with only enough time between formations to prevent mix-ups. With release altitudes set at from 5,000 to 8,000 feet, most of the B-29's were able to carry 12,000-pound loads, a mixture of 1,000- and 2,000-pound acoustic and magnetic mines.[107] The planes got off as scheduled and ninety-two dropped mines in the primary areas. Enemy air opposition was light, but at low altitudes the B-29's ran into a lot of antiaircraft fire, including some from ships in the Wakamatsu area, and three planes were

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lost. Minefield M (the western approach to the strait) was laid pretty much as planned though slightly south of the main shipping lane; in Minefield L (the eastern approach) a heavy concentration was laid in the main channel, but the field thinned out on either side and a rack failure in one B-29 left a three-mile gap.[108]

In the second mission, flown on the night of 30 March, eighty-five B-29's mined primary targets, completing the closure of Minefield L and blocking the approach to Sasebo and the southern approach to Kure and Hiroshima; the northern approach, where the attack was weakened by the aborting of four planes, was not entirely closed but was rendered dangerous for traffic.[109]

Although the Japanese were caught flatfooted by the mining attack, they immediately reacted with minesweeping activities, and to keep the fields replenished LeMay ordered the 313th Wing to sow a minimum of 2,000 mines in April.[110] Between the 1st and the 12th, Davies ran five small missions in which a total of forty-five B-29's, operating without a single loss, mined a number of areas: the two Shimonoseki fields, the approaches to Hiroshima-Kure, and Kure harbor itself.[111] But the 313th, like the command's other wings, was involved in support of the Okinawa battle and in strategic strikes and was behind schedule in mining; by 18 April it had planted only 367 of the 2,000 mines, so LeMay canceled the remaining small-force missions in favor of 2 full-wing efforts lifting 1,500 mines.[112] Other demands continued to interfere, and the wing, although dropping 1,070 tons of mines in 2 nights in March, expended only 288 tons in April.[113]

LeMay's directive of 18 April called for repeat missions to Shimonoseki, for blockading completely the approaches to Kobe and Osaka, and for laying only attrition fields at Tokyo, Yokohama, and Nagoya harbors. The latter objectives reflected an appreciation of current traffic patterns which has been validated by Japanese statistics made available after the war. Kobe and Osaka, at the eastern end of the Inland Sea, constituted together a shipping area second only to Shimonoseki Strait; the other ports, opening on the Pacific, had declined to where they were not worth an intensive campaign. Expressed in terms of the monthly average in the peak year 1942, tonnage handled in March 1945 was as follows: Kobe, 71.7 per cent; Osaka, 48.1; Yokohama, 11.6; Nagoya, 4.7; Tokyo, 2.3.[114]

The missions were not run until early May when the strikes in support of ICEBERG were tapering off. On the 3d, 88 B-29's sowed

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668 mines, with good patterns in the Kobe-Osaka area and Shimonoseki's Minefield L; on the other side of the strait, where only 17 of 30 planes assigned were able to attack, the field was not a tight one. On this mission the new A-6 pressure mechanism was used for the first time, and when a string of mines equipped with it fell into shallow water, the device was considered compromised.[115] On 5 May, eighty-six B-29's planted mines in eight fields. At Tokuyama, Aki-nada, Bingo-nada, and Shodo-shima–Bisan Seto, the patterns were good, but at four port areas—Nagoya, Kobe-Osaka, Hiroshima-Kure, and Tokyo—results were less satisfactory.[116]

In spite of occasional faulty drops, however, and the slowdown in April, the mining campaign had got off to a fine start. The enemy's first reaction had been to freeze his shipping in harbors affected by an attack until a channel could be cleared. By sweeping, by bombing shallow fields, and by using small suicide vessels, he was able to open some channels, but his countermeasures, never very effective, were made difficult as the 313th Wing varied its tactics and its mines and increased the number of its targets. The shortage of foodstuffs, aggravated by the B-29 fire blitz which had destroyed 25 per cent of the emergency rice stocks, was so stringent that ships had to keep moving; it became customary to allow the individual ship captain to decide whether to attempt to run a ruined channel or not.[117] Some ships were able to bull it through, others were hit. LeMay's A-2 estimated that by 27 April more than thirty ships had been sunk or damaged at Shimonoseki.[118] Postwar investigations scaled this down to 18 ships of 30,917 tons sunk or permanently disabled,[119] but the exact figure is of less importance than the fact that much of Japan's shipping was immobilized after each attack: the real aim was blockade rather than attrition. Tactical results of the mining had also been gratifying. No large warship passed through the Shimonoseki Strait after 27 March; some destroyers used it during the Okinawa campaign, but according to Japanese reports, at least four were sunk. When the task force headed by the *Yamato* sortied from the Inland Sea on 6 April, it was forced to use the Bungo Strait between Kyushu and Shikoku, a course which led to its detection and defeat. This futile gesture, and other movements of the remnants of the fleet, diverted minesweepers from their more important task of keeping the merchant fleet afloat.[120]

The missions of 3 and 5 May were actually a part of the planned April effort; before they were run, on 1 May, LeMay issued a target

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directive for the new month calling for 1,500 more mines to be divided between Shimonoseki and the harbors along the west shore of Kyushu and the northwest coast of Honshu.[121] The latter targets had been listed by the COA back in October, and now with the Inland Sea bottled up they had assumed a greater importance. Between 13 and 27 May the 313th Wing sent out 209 planes in 8 missions to lay 1,313 effective mines. Most of these went to Shimonoseki, the others being divided among a number of ports on the Sea of Japan: Miyazu, Maizuru, Tsuruga, Fushiki, Nanao, Niigata.[122]

During May the Japanese made some improvements in sweeping methods, particularly against the A-3 acoustic mine, but as they admitted later, the weight, spread, and variety of the 313th Wing's attack made countermeasures extremely difficult. The small western ports, where minesweepers were scarce, remained closed three to five days and traffic was dangerous long afterward. Even at Shimonoseki Strait the Japanese were able to sweep only a narrow channel, 200 to 500 meters wide, and that imperfectly. The strait was closed completely for four days in May and partially on other days; even with these precautions about a third of the ships attempting the passage were put out of service. Through traffic shrank to 404,000 tons, less than half the April figure, and there was a daily average of 80 ships tied up by the mine blockade. During May mines for the first time took a heavier toll of shipping than submarines, sinking or permanently disabling 85 ships of 213,000 tons, about 9 per cent of the existing merchant marine. Ship repair yards, some suffering from the direct or indirect effects of B-29 area attacks, were made difficult of access by the blockade just as they were needed most; shipbuilding could not keep up with sinkings, and the pooling of all cargo vessels under the new War Power Council came too late to be of any service.[123]

LeMay's original plan had been indefinite in respect to mining operations after 1 June; there had been some hope in his headquarters that large-scale mining might taper off into a policing job, but in the face of the evident success of the campaign, he was bound to continue it. Actually, in spite of a full docket of bombing, LeMay stepped up the pace of the mining program. He gave first priority to Empire strikes, even for the 313th Wing, but ordered Davies to use 1 group, when not otherwise employed, to sow 4,050 mines in small increments.[124] Davies assigned the task to Lt. Col. Charles M. Eisenhart's 505th Bombardment Group (VH), which flew fourteen missions between 7 June and 3 July. In 404 B-29 sorties the group planted 3,542

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effective mines in 10 areas in the Inland Sea and Sea of Japan: the two Shimonoseki fields, Kobe-Osaka, Fukuoka-Karatsu, Fushiki-Nanao, Niigata-Sakata, Funakawa, Nagi–Senzaki–Yuya-wan, Sakai, and Maizuru-Miyazu-Obama-Tsuruga. Mines were adjusted to sink ships of various sizes, and the proportion set for smaller ships (55 per cent for vessels of 2,000 tons or less), like the unimportance of many of the targets in normal times, was an index of the desperate condition of Japanese shipping.[125]

The task of modifying and loading the various types of mines to be used for each mission was an exacting one, done usually under pressure of time, for mines were rarely available more than a day or two before needed. The supply situation, always tight, was further strained by the increased weight of attacks. Sometimes the designated mine types were not available in proper quantities; sometimes missions had to be postponed until a shipment of mines arrived—the slowdown in April was caused in part by lack of mines and mine assemblies.[126] The shortage in any mine type worked against the system of mixing the weapons used on each mission and aggravated the concern lest the Japanese develop effective countermeasures against all.

This concern, a healthy sign in a combat outfit, proved to be superfluous. Interviews with Japanese mining experts after the war indicate that they had little chance to break the blockade. After being caught by surprise, they tried desperately to meet the new form of attack: in all, 349 vessels and 20,000 men were assigned to minesweeping; staffs engaged in research on countermeasures were doubled and given highest priority. But the scientists were not given full cooperation by the military; measures for detection remained inefficient, making small use of radar and depending chiefly on visual spotting by watchers on shore or afloat. On the basis of these methods the Japanese estimated that the B-29's dropped only 3,690 mines during the campaign instead of the more than 12,000 actually expended. They developed a fairly effective method of sweeping acoustic mines and tried, unsuccessfully, to sweep magnetic mines with airplanes. They were able to explode subsonic mines with bombs (many others went off prematurely without enemy help) and apparently brought out late in June a new floating electric loop switch for use against magnetic mines. But the A-6 pressure mechanism, very effective on the MK25 Model 2 mine, was apparently not picked up by the Japanese until 27 May and no sure defense against it was discovered.[127]

Whatever the merit of the enemy's countermeasures, the weight of

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the combined attack against his shipping was too heavy to combat, and by July his shipping situation was hopeless. Submarines, which had moved into the Sea of Japan in April, sank 92,000 tons in June; aircraft, operating in Japanese and Korean waters, accounted for 56,000 tons, including 18,000 destroyed by B-29's in an incendiary raid on Osaka on 1 June. Mines dropped by the 313th Wing sank or disabled 83 ships of 163,000 tons, some in the Sea of Japan, but more than half of them in the Shimonoseki Strait. The decline in tonnage sunk as compared with May results was indicative of the shrinkage in the enemy's merchant marine rather than of any improvement in defensive measures. Ports opening onto the Pacific had closed down for the rest of the war: Nagoya, on 27 April; Shimizu, 14 May; Yokohama, 23 May; Tokyo, 27 May; Shiogama, 29 June. During June, Shimonoseki Strait was again closed for five days; by the end of the month Moji, the principal port, and the anchorages at Matsue and He-saki appeared to be completely abandoned—ships were anchoring in the swift current of the strait or in small unmined harbors outside. Small wonder that a member of the War Power Council excused its failure to relieve the situation by remarking that "all members knew the circumstances, and knew that Japan was hopeless."[128]

During the last weeks of the war, the 313th Wing continued to cooperate with other aircraft and with submarines in a crescendo of attacks on the enemy's dwindling merchant fleet. Army and Marine planes from Okinawa struck at shipping along a broad arc from Kyushu to the Asiatic continent.* Carriers from the Third Fleet dealt a devastating blow to shipping and the railroad ferries in the Tsugaru Strait areas, disrupting traffic between Hokkaido and Honshu; later, with the aid of British carriers, they hit various harbors in the Inland Sea. The B-29's continued their blockade of the Shimonoseki Strait and northwest Honshu ports and extended their coverage to include Korea. Because southern Korea was within range of planes based on Okinawa, the 313th Wing concentrated on ports farther up the peninsula—Wonsan, Hungnam, Chongjin, and Najin. For these targets, correctly assumed to be weak in countermeasures, the wing used magnetic and acoustic mines, types against which the enemy had developed a partial defense; this saved for Shimonoseki the more lethal pressure mines, and when other types were used there they were made more dangerous by the use of arming delays and ship-counting mechanisms.[129]

* See below, pp. 695–99.

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Davies used in the last series of mining missions two successive groups—the 6th Bombardment Group (VH) from 8 to 20 July and the 504th from 24 July to 14 August. In 15 missions, 445 B-29's out of 474 airborne planted 3,578 mines in 17 fields. About thirty planes went out on each mission, divided among several targets. Because of the distance involved, B-29's mining Korean ports staged through Iwo Jima. Losses were somewhat heavier than in previous months, amounting to six B-29's, of which three were destroyed by the enemy. The Japanese had moved more heavy AA guns and searchlights into the Shimonoseki area, forcing the B-29's to raise the altitude of attack to over 12,000 feet on occasion. Parachuted mines dropped from that height sometimes drifted widely, but even without the strays there were more than enough to tighten the blockade.[130]

Kobe-Osaka, which had cleared 320,000 tons in March, handled only 44,000 in July. Between 1 July and 14 August the Shimonoseki Strait was closed completely on 16 days and on many others only a ship or two got through: the total for the first 15 days of August was only 30 ships of 29,954 tons, about 7 per cent of the March traffic. In spite of the increasing stringency of the blockade, the enemy was forced to send his ships out without thorough minesweeping; in spite of the diminished size of the merchant fleet, he lost 478,000 tons of shipping in July, of which 198,000 were attributable to mines.[131]

During July the 313th Wing dropped 4,500,000 propaganda leaflets urging the Japanese to surrender before they suffered starvation. This was no idle threat. By mid-August the merchant marine had been reduced to about 1,500,000 tons afloat (exclusive of the useless tankers) and sea-borne traffic had almost ceased. Dependent upon imports for much of their food supply, the Japanese had cut off all shipments of other raw materials and were using the scanty traffic entirely for foodstuffs from the mainland, but blockade runners could do little toward supplying the demand and the caloric content of the average man's fare had shrunk dangerously.

The 313th Wing's B-29's were not, of course, solely or mainly responsible for those conditions; blockade and attrition had been the coordinated task of the several services as the previous pages have shown. In its final report, the U.S. Strategic Bombing Survey credits all agencies with sinking 8,900,000 tons of Japanese shipping, and divides the credit according to the following list of percentages: submarines, 54.7; carrier-based planes, 16.3; AAF planes, 10.2; mines (largely dropped by B-29's), 9.3; Navy and Marine land-based planes,

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4.3; surface ship gunfire, less than 1; and the remainder, about 4 per cent, to marine accidents. The 313th Wing got into the game late, operating with mines for only four and one-half months and at a period when the enemy's merchant fleet had contracted in size and in scope of its activities. During that short period mines planted by the wing were more destructive than any other weapon, accounting for about half of the total tonnage disposed of. To accomplish this task, the 313th sent out 1,528 sorties and planted 12,053 mines, a much heavier effort than had been suggested by the Navy in the negotiations of 1944 and, indeed, the heaviest aerial mining campaign ever waged. That this could be accomplished in the midst of a rigorous bombing program and at a loss of only sixteen planes (only nine to enemy action) speaks well of the efficiency of the 313th Wing and of mine warfare.[132]

In the early weeks of the campaign, mining operations carried a top-secret classification, and LeMay was concerned lest the absence of any public recognition hurt the morale of B-29 crews engaged in mining—an unsatisfactory type of operations at best since the crewman never sees the results of his strike.[133] Recognition came eventually however: the British, old hands at the game, said the B-29 mining was "very much like a dream come true," and Nimitz' messages of congratulations, including the final one in which he spoke of "phenomenal results," went beyond the demands of interservice protocol.[134] More restrained, but no less satisfying, was the postwar remark of a Japanese mine expert who had been in charge of minesweeping in the Inland Sea: "Surely B-29's as a minelaying weapon were quite a hit in this war."[135] More eloquent than any encomium, however, were the bare statistics.

TABLE 1

INCENDIARY MISSIONS AGAINST SECONDARY CITIES

Mission No.	*Date*	*Target*	*Population*	*Square Miles Destroyed*	*Per Cent of Total*
206	17 June 45	Kagoshima	190,250	2.11	44.1
207	17 June 45	Omuta	177,000	0.217	4.1
208	17 June 45	Hamamatsu	165,000	2.44	70.
209	17 June 45	Yokkaichi	102,000	1.23	60.
210	19 June 45	Toyohashi	142,700	1.7	52.
211	19 June 45	Fukuoka	323,200	1.37	21.5
212	19 June 45	Shizuoka	212,200	2.25	66.
234	28 June 45	Okayama	163,560	2.13	63.
235	28 June 45	Sasebo	206,000	0.97	48.
236	28 June 45	Moji	139,000	0.302	26.9

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TABLE 1 (*Continued*)

INCENDIARY MISSIONS AGAINST SECONDARY CITIES

Mission No.	*Date*	*Target*	*Population*	*Square Miles Destroyed*	*Per Cent of Total*
237	28 June 45	Nobeoka	79,426	0.52	36.
240	1 July 45	Kure	277,000	1.3	40.
241	1 July 45	Kumamato	211,000	1.0	20.
242	1 July 45	Ube	100,600	0.42	23.
243	1 July 45	Shimonoseki	196,000	0.51	36.
247	3 July 45	Takamatsu	111,200	1.4	78.
248	3 July 45	Kochi	106,650	0.92	48.
249	3 July 45	Himeji	104,250	1.216	63.3
250	3 July 45	Tokushima	119,600	1.7	74.
251	6 July 45	Chiba	92,000	0.86	43.4
252	6 July 45	Akashi	90,000	0.81	57.
253	6 July 45	Shimizu	68,600	0.71	50.
254	6 July 45	Kofu	102,400	1.3	65.
257	9 July 45	Sendai	233,630	1.22	27.
258	9 July 45	Sakai	182,150	1.02	44.
259	9 July 45	Wakayama	195,200	2.1	52.5
260	9 July 45	Gifu	172,340	1.93	74.
263	12 July 45	Utsunomiya	87,868	0.94	34.2
264	12 July 45	Ichinomiya	70,800	0.01	0.8
265	12 July 45	Tsuruga	31,350	0.77	68.
266	12 July 45	Uwajima	52,100	0.14	14.
271	16 July 45	Namazu	53,165	1.4	89.5
272	16 July 45	Oita	61,000	0.555	25.2
273	16 July 45	Kuwana	41,850	0.63	77.
274	16 July 45	Hiratsuka	42,150	1.04	44.2
277	19 July 45	Fukui	98,000	1.6	84.8
278	19 July 45	Hitachi	82,700	0.88	64.5
279	19 July 45	Choshi	61,200	0.379	33.8
280	19 July 45	Okazaki	84,070	0.65	68.
293	26 July 45	Matsuyama	66,300	1.22	73.
294	26 July 45	Tokuyama	38,400	0.47	37.
295	26 July 45	Omuta	177,000	2.05	38.
297	28 July 45	Tsu	68,625	0.84	57.
298	28 July 45	Aomori	100,000	1.06	64.
299	28 July 45	Ichinomiya	70,800	0.99	75.
300	28 July 45	Uji-Yamada	52,555	0.36	39.
301	28 July 45	Ogaki	56,100	0.48	40.
302	28 July 45	Uwajima	52,100	0.53	52.
306	1 Aug. 45	Hachioji	62,280	1.12	80.
307	1 Aug. 45	Toyama	127,860	1.87	99.5
308	1 Aug. 45	Nagaoka	67,000	1.33	65.5
309	1 Aug. 45	Mito	66,300	1.7	65.
312	5 Aug. 45	Saga	50,400	0.02	1.5
313	5 Aug. 45	Maebashi	87,000	1.0	42.5
314	5 Aug. 45	Nishinomiya-Mikage	111,800	2.8	29.6
316	5 Aug. 45	Imabari	60,000	0.73	76.
319	8 Aug. 45	Yawata	261,300	1.22	21.
321	8 Aug. 45	Fukuyama	56,653	0.88	73.3
329	14 Aug. 45	Kumagaya	49,000	0.27	45.
330	14 Aug. 45	Isezaki	40,000	0.166	17.

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CHAPTER 22

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REORGANIZATION FOR VICTORY

WITH the liberation of the Philippines and the seizure of Iwo Jima and Okinawa, U.S. forces had brought the Japanese to bay in their home islands. Already the B-29's had pierced the inner defenses of the homeland to attack the very means for waging war, and such hope as the Japanese had of maintaining their war effort was threatened by a continuing air bombardment and by a sea and air blockade that was becoming ever more tight. In the atom bomb, as events proved, the United States possessed the means to force a decision by Japan in favor of an early surrender rather than a suicidal last-ditch defense, but American planners had not been able to count upon that result. Consequently, plans for the final assault upon Japan looked to joint action by all arms, and the question of a united command became now a critical one.

The Pacific war had been fought without the aid of a united command. MacArthur's Army forces, with assistance from the Navy and the Marines, had fought their way along the upper coast of New Guinea to positions making possible the reconquest of the Philippines. Under Nimitz the Navy, assisted by Army units, had driven across the central Pacific into the Marianas and to Okinawa. As these forces came together within striking distance of the enemy's homeland, it was apparent that a continuing division of command in the face of an entrenched and fanatical enemy might add greatly to the cost of a final victory. The unique arrangements for command of the B-29's further complicated the problem.

Strategy and Command

The idea of a united command for the Pacific was not new. After an inspection trip to the South Pacific in the fall of 1942, General Arnold

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had been convinced that there should be only one Allied leader for Pacific operations.[1] And on the eve of the SEXTANT conference of November 1943, Admiral King had suggested that the JCS approach the British regarding the designation of a supreme commander, but the command of OVERLORD was yet to be settled and Admiral Leahy pointed out that the British government could hardly agree to an American supreme commander both in Europe and the Pacific.[2] The Army seems to have been reluctant thereafter to challenge the Navy's assertion that its interest in the Pacific was paramount lest it get a decision which would make more difficult its own problem of dealing with MacArthur; the Navy perhaps knew some reluctance, lest the decision give it a supreme commander in the person of MacArthur. And so the war had continued under the divided command of MacArthur and Nimitz, with overlapping lines of communication, overlapping air operations, and overlapping sea operations.

As usual the problem of command was intimately joined to that of strategy. By September 1944 the hope of an early victory in Europe was well enough grounded to permit the CCS to include seizure of "objectives in the industrial heart of Japan" in the official statement of the Allied mission in the Pacific.[3] This meant, of course, the Tokyo area, but even after the decision to bypass Formosa and take the Ryukyus and Iwo Jima, Washington planners were uncertain as to the best approach to that objective. The difficulties resulting from inadequate air preparation for the Leyte landing convinced them that the approach to Tokyo must afford good bases for preparatory air bombardment.[4] Hokkaido, Kyushu, Korea, and China could be used as supporting bases, but the last two areas would require major land battles to win the bases. Because of weather, Kyushu, the best supporting air-base area, could not be safely invaded until September 1945; the weather at Hokkaido, on the other hand, would be best in May.[5] Although the latter had climate and terrain which were less satisfactory than Kyushu's and was out of the general line of attack fixed by previous operations, AAF planners argued that plans for its seizure as an intermediate step between the Ryukyus and Kyushu should not be discarded; the operation promised an additional advantage should Russia enter the war and render her supply lines from the U.S. vulnerable.[6] Admiral King also believed other operations would be needed after the seizure of the Ryukyus and before Kyushu: he advocated taking the Chusan archipelago, located in Chinese

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coastal waters south of Hangchow and Shanghai, to secure bases for a more effective blockade of Japan.[7] To this end, Nimitz sent in a plan, with target dates between 20 August and 15 September, even though he professed his inability to consolidate the Ryukyus without redeployed forces from Europe.[8] On 17 January 1945 the JCS could agree on no more than a directive for Nimitz to proceed with the Ryukyus invasion, leaving Chusan for future consideration.[9]

Whatever the ultimate decision on strategy, there was no escape from the problem of command; indeed, the delay in reaching a decision on strategy was obviously related to the continuing uncertainty as to leadership. If it were assumed that leadership in the assault on Japan properly fell to Nimitz because all of the Pacific north of the Philippines lay in his theater, there remained the question of what to do with MacArthur's combat-seasoned troops, who would have no mission after the conquest of the Philippines and whose record was one of maximum achievement with minimum loss. They might of course be transferred to Nimitz, but such a transfer without MacArthur made little sense; and to suggest the inclusion of MacArthur in the transfer was to face again the question of command, for that question rarely can be considered apart from the personalities involved. Suggestions that MacArthur might be employed in the capture of Hainan, leaving Nimitz to depend chiefly upon ground forces redeployed from Europe, met with the former's opinion that Hainan offered no opportunity of real military significance.[10] In MacArthur's opinion, moreover, it was unthinkable that an admiral, or some inexperienced general under an admiral, should command forty or fifty divisions in an invasion of Japan. Not only would it be "trifling with American lives," but it would jeopardize the future of the U.S. Army.[11]

To General Arnold the problem was intimately joined with the need to strengthen the organization of AAF units in the Pacific. For him and his staff the position of the seven different air forces engaged in the war with Japan—the Fifth, Seventh, Tenth, Eleventh, Thirteenth, Fourteenth, and Twentieth—had long been a source of frustration,[12] and by the fall of 1944 the shrinking perimeter from which air assaults in ever mounting weight were being launched against the enemy had accentuated already difficult problems of operational and logistical control. With the imminent deployment to the Pacific of

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much of the vast AAF resources assembled in Europe, reorganization had become an urgent necessity.

Arnold felt that the answer to the over-all problem lay in the appointment of a supreme commander, with coequal status for his air, ground, and naval subordinates—an arrangement which would permit consolidated control of all AAF units in the Pacific by the top air commander. This solution was one for which Arnold long had struggled in Europe. There his hope of bringing under one air command all air forces engaged in the war with Germany had been frustrated, but he at least had gained a single headquarters controlling all AAF strategic operations in Europe and holding administrative authority over all AAF units in the United Kingdom.* If this headquarters only in part realized Arnold's hope for a command structure fully geared to his conception of the flexibility of air power, it was nevertheless a step in the right direction and a precedent that might prove helpful in the Pacific.

In the absence of any immediate prospect that a supreme commander for the Japanese war would be designated, Arnold on 27 October 1944 urged Marshall to appoint one air commander to coordinate all strategic bombing of Japan.[13] Such a commander necessarily would enjoy a status comparable to that of ranking ground and naval commanders, and his appointment might in itself serve as a step toward placing all forces—air, naval, and ground—under one supreme theater command.[14] That the experience gained in Europe served in some measure to suggest this idea and to provide an argument for its adoption is shown in a Spaatz memorandum of early November.[15] This recommended the designation of a "Commanding General, United States Army Air Forces in Pacific and Far East" who would then be responsible directly to the Commanding General, AAF. As Arnold's deputy, this new commander would have not only direct command of the Twentieth Air Force but all heavy bomber units in the Pacific, China, and India, together with supporting fighter and service units. Tactical air forces would remain under the operational control of the several task force and theater commands, but administrative control of all air units—that is, training, the determination of

* For Arnold's persistent advocacy of a "theater air force" controlling operations in both ETO and MTO, see Vol. II, *passim*, and for the final organization, see pp. 733–56.

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operational techniques, and the control of all AAF supply items—would be centralized under the new strategic air command. Army commanders would provide only such items of supply as were common to all Army units. In short, though there might continue to be several different air forces with distinct missions, they would be subordinate in vital ways to an over-all air command whose operational mission was to be considered paramount.

In an attempt to adapt these proposals to the hard facts of the situation in the Pacific, Maj. Gen. Laurence S. Kuter (AC/AS, Plans) proposed that all land-based aircraft committed to the strategic air offensive against Japan be assigned to the Twentieth Air Force.[16] Maj. Gen. John E. Hull of OPD rejected the proposal on the ground that it was not calculated to meet theater approval, although his objection also seems to have been based on the fear that agreement might perpetuate current methods for control of B-29 operations against Japan. "Command of great masses of airplanes from Washington," he advised Arnold, "is no more justified than would be the command of the Pacific Fleets by Admiral King from Constitution Avenue, or General Marshall's attempting to fight the ground battles of the Pacific from the Pentagon."[17] Hull also suggested that since carrier-based aircraft might be effective against certain strategic targets, they might be given a role comparable to that of the RAF in the Combined Bomber Offensive against Germany.

As the discussions between OPD and Kuter continued, the latter on 12 December 1944 reported agreement on the need for one commander of all land-based aircraft engaged in the strategic bombardment of Japan and for close coordination of land- and carrier-based strikes. But it was recognized that the proposal "would arouse strenuous objections by all the theater or force commanders" in the Pacific. An "educational requirement" made necessary a plan to attain the objective "by successive steps in the development of air command in the Pacific"; nothing should be done to jeopardize Marshall's effort to straighten out command problems between the Army and Navy. Although Kuter and OPD would continue to outline proposals for the air organization, the paper was not to be presented to the Navy until the larger question of Pacific command had been settled.[18]

If the AAF effort to secure one air commander coequal with Army and Navy leaders had been thus temporarily stalled, it also had served

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perhaps to suggest a way out of the MacArthur-Nimitz debate. On 21 December Marshall informally proposed to King a functional division of responsibility, with all Army resources in POA and SWPA to be placed under MacArthur and all naval resources under Nimitz.[19] MacArthur already had agreed that such a division, depending upon cooperation between the two services, might be better than the elevation of either himself or Nimitz to supreme command.[20] Arnold, who continued to believe that a supreme commander with three coequal subordinates was the only proper solution,[21] later speculated that MacArthur was convinced the Navy would find some way to escape the control of any unified command.[22] Marshall's proposal had come in the midst of the Battle of the Bulge, which destroyed all hope of early redeployment from Europe to the Pacific; indeed, two divisions already committed to the Pacific were ordered to ETO instead,[23] and it was clear that Pacific questions for the time must be given a position of secondary importance.

Not until late February 1945 did Marshall make a formal proposal for a functional division of command responsibilities in the Pacific. Arnold agreed but insisted on continued independence for the Twentieth Air Force.[24] Admiral King, who found it "impracticable to separate command questions from the operations," responded on 8 March, conceding Army command of operations against Japan but keeping the Chusan area on the China coast as an immediate objective to be seized under a Navy command.[25] His proposal maintained all geographical divisions theretofore recognized and added the Japanese Area. The commander in this area, in addition to leading the final assault, would have "administrative and logistical responsibility" for all Army forces in the Pacific, less those in the Southeast Pacific Area. Similarly, CINCPAC-CINCPOA would have command of all Pacific naval forces, less those in the Southeast Pacific Area. The commander in the Japanese Area would be charged to allocate necessary Army forces to POA and SWPA; and while the latter completed the conquest of the Philippines and North Borneo, the former would plan for the landings at Chusan and other operations necessary to keep open a sea route to La Pérouse Strait against Russia's entry into the war. In sum, the Army would gain control of all its Pacific resources and the promise of leadership in the final assault on the Japanese home islands; the Navy would have first claim on those and other resources

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for its Chusan operations. Such, at any rate, seems to be a fair reading of what General Hull aptly described as a remarkably complex proposal.[26]

Between 10 and 16 March the Joint Planning Staff sat in daily sessions, only to send the two proposals back to the JCS with the ambiguous comment that either of them must be considered an improvement over past practice.[27] The Navy planner had twice tried to get agreement on a draft directive for operations, leaving command to further consideration, and he had repeatedly insisted that existing logistic organization not be disturbed.[28] The Navy planners argued that an advanced naval base at Chusan might be needed to support the Kyushu attack and that air bases there would be needed to interdict Japanese communications with the mainland.[29] A little later, the Navy talked of a new line of strategy through the Yellow Sea, with Chusan, the Shantung Peninsula, Korea, Quelpart Island, and Tsushima Island mentioned as objectives that might be taken to isolate Japan.[30] Finally, on 20 March King presented a new draft command directive dropping the commander of the Japanese Area and proposing a Commander in Chief, Army Forces in the Pacific (CINCAFPAC) to "coordinate the administration and logistical support" of all Army forces in the Pacific, through existing area commanders, and to assume operational command of the Japanese invasion. King suggested that if such a command decision was not acceptable, the JCS should nevertheless issue a directive for immediate operations without further delay.[31]

Whether President Roosevelt broke the impasse is not clear, but he did send word by Kenney on 20 March to MacArthur that he would "have a lot of work to do well to the north of the Philippines before very long."[32] On 29 March OPD drafted a message to MacArthur indicating substantial approval of the Marshall proposal,[33] and on 3 April the JCS approved Marshall's draft directive as emended by General Hull and Admiral Cooke.[34] By this directive MacArthur was designated Commander in Chief, Army Forces in the Pacific, with control of all Army resources in the Pacific theater, less those in the southeast Pacific and in the Alaskan Department; all naval resources in the Pacific (less those in the Southeast Pacific Area) were placed under Nimitz. The JCS would normally charge CINCAFPAC with land campaigns and CINCPAC with sea campaigns, and any exchange of units between these two was to be by mutual agreement. The

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Twentieth Air Force, for the present, was to continue under JCS control. The accompanying operational directive instructed Nimitz to complete the Ryukyus operation, maintain sea communications with the western Pacific, continue planning for a Chusan operation, plan to keep open a sea route to La Pérouse Strait, provide naval forces to support CINCSWPA, and plan for the naval and amphibious phases of the invasion of Japan. MacArthur was to complete the liberation of the Philippines, plan to occupy North Borneo with Australian troops, provide Army forces needed by Nimitz, and make plans for the campaign in Japan. The Twentieth Air Force was to cooperate with both commanders.[35]

MacArthur promptly assumed command as CINCAFPAC. U.S. Army Forces in the Far East, it was decided, would be retained as a legal fiction for the time being, and U.S. Army Services of Supply, MacArthur's former logistical headquarters, was discontinued: the functions of both were absorbed in a new headquarters, U.S. Army Forces, Western Pacific (AFWESPAC). USAFPOA was discontinued and replaced by U.S. Army Forces, Middle Pacific (AFMIDPAC). FEAF, presumably with Kenney at its head, was to continue to serve as MacArthur's air command; for AAFPOA headquarters he had no use.[36] This reorganization assumed that SWPA ultimately would be dissolved, with all territory south of the Philippines, except for the U.S. fleet base in the Admiralties, going to the Southeast Asia Command. Although the JCS shared MacArthur's hope that this transfer might be effected on or about 15 August 1945, Lord Mountbatten was hesitant to accept the responsibility prior to the capture of Singapore. Discussion continued but the transfer had not been completed at the time of the Japanese surrender.[37]

With the question of the over-all command settled, AC/AS, Plans, during April restudied the issue of a Pacific air command. Kuter now recommended establishment of the United States Army Strategic Air Forces in the Pacific (USASTAF), to consist initially of the combat and service units assigned to the Twentieth Air Force, together with all other elements of the AAF formerly assigned to AAFPOA, excepting the Seventh Air Force and those units assigned to theater commanders for defensive purposes or for operations against bypassed islands. The commander of USASTAF was to be charged with broad administrative and logistical responsibilities for AAF forces assigned to him as well as for all AAF units in his air-base area.[38] To prepare

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for the activation of the new command by 1 July 1945, Lt. Gen. Barney M. Giles, AAF deputy commander, was appointed commanding general of AAFPOA and deputy commander of the Twentieth Air Force.[39] Giles departed for the Pacific on 1 May and was joined later in the month by Kuter, who had been named as Giles' deputy.[40] Giles had been told by Arnold that his new assignment would include neither administrative nor operational control of the B-29 forces and that LeMay was to be acting deputy commander of the Twentieth Air Force.[41] Yet Giles was named as deputy commander; on 5 May Norstad told LeMay that, while the plan was not firm, it was expected that Giles would take over operational control of both XX and XXI Bomber Commands.[42]

In the end it was belatedly decided to move Spaatz to the Pacific. After a visit with Arnold in Italy on 27 April, Spaatz wrote Eaker, who had succeeded Giles as deputy commander of the AAF, that Arnold seemed convinced that a setup similar to USSTAF in Europe was the logical one, with MacArthur having administrative control of the Twentieth Air Force, with strategic directives issued by the JCS through Arnold, and with MacArthur having full call on the strategic forces whenever the tactical situation required it.[43] Spaatz added that this, "in my opinion, is the best present solution," but there was no indication that he had any thought that he himself might be designated for the new command. A letter of the same date from Eaker to Spaatz indicated that he was scheduled to return to the United States about 1 July to assume command of the new Continental Air Force.[44]

Arnold's decision to name Spaatz to the command of USASTAF was announced in a letter dated 21 May and delivered to Spaatz in England by Robert A. Lovett, Assistant Secretary of War for Air.[45] After explaining the discussions which had taken place since their recent conversation in Italy, Arnold wrote:

> My present thought is that we should form the same set-up in the Pacific which was so successful in Europe—the Eighth Air Force with 720 B-29's operating out of the Okinawa Area under Doolittle, and the Twentieth Air Force, perhaps under Twining's eventual command, operating out of the Marianas with 720 B-29's, and an overall USSTAF [*sic*] command, coordinating with MacArthur and Nimitz on the strategic and logistic side. . . . [As for command of USASTAF,] I have come to the conclusion that we have nobody for the job except yourself. I do not believe that Giles has the combat experience to justify our putting him over Doolittle and Twining, with their long and suc-

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cessful experience in the European war. Also, I believe we need somebody who can work more nearly on parity and have more influence with MacArthur and Nimitz. . . . I can see nobody else who has the chance to save for us a proper representation in the air war in the Pacific, and who can assure that we will have bases from which we can launch and express a proper scale of air effort against the Japs.

Following a conference with Giles, MacArthur had on 14 May announced his own plans for the realignment of Army Air Forces in the Pacific.[46] Throughout the preceding month staff consultations had continued on the knotty problems involved in the exchange of forces and responsibilities between MacArthur and Nimitz. Although many hitches had developed and there were charges of bad faith, agreement on the reassignment of air force units had come with relative ease. At Guam in mid-April Kenney made detailed proposals for moving the Fifth Air Force to Okinawa, and Navy spokesmen promptly accepted.[47] It was subsequently agreed that all Seventh Air Force units, except for a small force left to defend Hawaii and for the VII Fighter Command units on Iwo Jima needed for the B-29 campaign, would be transferred to Okinawa and be assigned to FEAF. Fighter units at Iwo would be assigned to the Twentieth Air Force. At Manila on 16 May, Nimitz' representatives agreed to press necessary airfield construction in the Ryukyus on the assurance that MacArthur would provide substantial engineering assistance. AFPAC units on Okinawa were to be supplied by MacArthur except for petroleum products, which Nimitz promised to provide.[48] A reinforced FEAF, cut clear of its responsibilities for the rear areas, was soon to be in position to assume a major role in the air bombardment of the Japanese home islands.

At the close of April the Joint Planning Staff, after discussions which were at times almost reduced to haggling, had discounted the idea of encircling Japan.[49] Admiral King then promptly proposed on 30 April the issuance of a directive for an air-land-sea assault on Kyushu, southernmost of Japan's home islands.[50] On the joint planning level the debate on the implications of parity between MacArthur and Nimitz continued; the Navy argued that in any amphibious assault Nimitz should carry the chief responsibility up to the actual lodgment of ground forces ashore; Army and AAF representatives adamantly insisted that the primary responsibility for the planning of such an assault belonged to MacArthur.[51] At the level of the Joint Chiefs, King could not agree "that the control of any part of the

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amphibious phase of the operation, including the amphibious assault," should be under the control of MacArthur.[52] General Marshall feared a dangerous division of control, and bluntly demanded that the JCS assign a primary command responsibility.[53]

Finally, on 25 May, the JCS spelled out a directive for the landing on Kyushu (OLYMPIC*) with a target date of 1 November 1945.[54] For this landing MacArthur was assigned the "primary responsibility," which included control of the actual amphibious assault through appropriate naval commanders, but he was directed to "cooperate" with Nimitz in planning the amphibious phase of the operation. For this phase Nimitz was charged with the responsibility, and he would "correlate" his plans with MacArthur. The Twentieth Air Force would "cooperate" in the execution of OLYMPIC and might be placed under the "direction" of either Nimitz or MacArthur for the support of their operations. Like all compromises, the actual interpretation of the agreement would depend much upon circumstances and the personalities of key commanders, but the directive also specified: "The land campaign and requirements . . . are primary in the OLYMPIC operation. Account of this will be taken in the preparation, coordination and execution of plans."

Once the problem of the high command had been settled, General Arnold was at last able to bring his plans for USASTAF to the attention of the Joint Chiefs. On 26 May he requested JCS approval for the movement of Twentieth Air Force Headquarters from Washington to Guam, effective 1 July, and its simultaneous redesignation as the U.S. Army Strategic Air Forces with Spaatz in command and with two strategic air forces operating under its control. The XX Bomber Command units, deployed to the Ryukyus, were to be assigned to the Eighth Air Force, and XXI Bomber Command was to become the Twentieth Air Force. This much of Arnold's proposition met no real challenge in JCS discussions, but then he stated that "due to the growth and continuing expansion of this air force [USASTAF] I consider that it is no longer practicable for a force of this magnitude to depend on other commanders for complete administration and logistical support." He expected General Spaatz to command USASTAF as he had USSTAF in Europe.[55] Admiral Leahy viewed Arnold's proposal as a violation of the principle of unity of command,

* Because of a possible compromise of the code name through its publication in a restricted document, MAJESTIC was substituted for OLYMPIC on 9 August 1945.

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arguing that it was "essential to efficiency" that USASTAF be subordinated to MacArthur;[56] Brig. Gen. Lauris Norstad, the new AC/AS, Plans, countered that the very coequal status of Nimitz and MacArthur obviated considerations of command unity.[57] General Lincoln of OPD thought that Arnold's bold statement should be watered down to note that "a review of the adequacy of existing administrative and logistical support arrangements is in order."[58] Unable to secure approval for his proposed directive at a JCS meeting on 29 May, General Arnold withdrew the whole paper.[59]

After additional thought, the JCS on 1 June sent out a message detailing the proposed air force reorganization, with the observation that the command reorganization "will enable COMGENUSASTAF to present to CINCAFPAC and CINCPAC his requirements so that adjustments necessary to meet changing conditions will whenever possible be made in the Pacific." At Admiral King's insistence, Nimitz and MacArthur were invited to comment on the reorganization.[60] Nimitz quickly radioed his concurrence,[61] but MacArthur objected. He insisted that all land-based air forces be put under a single commander—who obviously would fall under his own control.[62] It was suspected that MacArthur's objection was to Spaatz rather than to the proposed organization, and that the objection had been entered for the protection of Kenney and as a safeguard against the development of an over-all air command independent of AFPAC.[63] MacArthur's nonconcurrence, however, prompted Admiral King to propose that the Twentieth Air Force be transferred to the theater without redesignation and that existing arrangements and directives should continue in force. He now suggested that Nimitz might even have a "continuing requirement" for Headquarters, AAFPOA, to control such AAF units as might be assigned to him.[64] To clear up MacArthur's objections and other questions, on 8 June Arnold left for the Pacific, where he conferred with Nimitz, MacArthur, and other key commanders.[65]

Back in Washington, Arnold, on 2 July, secured general JCS agreement to the organization of USASTAF, and by 10 July a compromise had been reached.[66] The directive provided that the new command consist initially of the combat and service units currently assigned to or operating with the Twentieth Air Force, the headquarters and headquarters squadron of the Eighth Air Force, and other elements to be agreed upon mutually by USASTAF, CINCAF-

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PAC, and CINCPAC or to be assigned by higher authority. USASTAF was charged with the conduct of land-based strategic air operations against Japan "with the object of accomplishing the progressive destruction and dislocation of Japan's military, industrial, and economic systems to a point where her capacity for armed resistance is fatally weakened." Coordination of this effort with strategic bombing by the land-based aircraft of CINCAFPAC and by the carrier-based aircraft of CINCPAC was to be effected through directives issued by the JCS, with Arnold acting as executive agent. USASTAF was further directed to cooperate with MacArthur and Nimitz in the preparation and execution of their plans for the final defeat of Japan. Internal administration and internal logistical support of all its forces was the responsibility of USASTAF, but MacArthur and Nimitz were charged with responsibility for meeting USASTAF's needs. A headquarters was to be designated to discharge the functions of AAFPOA which did not pass to USASTAF, and the transfer of AAFPOA functions was to be effected by mutual agreement between USASTAF, CINCAFPAC, and CINCPAC. Finally, all agreements and directives of the Twentieth Air Force were to be binding on USASTAF until changed. Implementing the JCS directive, a War Department letter of 12 July delineated the necessary changes in organization, to be effective on 16 July.[67] Headquarters redesignations were to be undertaken as planned, USASTAF would absorb the personnel of AAFPOA, and a division of the bulk allotment of personnel and service units between USASTAF and CINCAFPAC was to be effected by agreement with AFMIDPAC.

The unique experiment in air command represented by the original Twentieth Air Force was thus scheduled for an early termination. That experiment had been undertaken in part because of the extraordinary complexity which characterized the command of U.S. forces engaged in the war with Japan,* and it had made its own contribution toward rendering the command structure even more complex. If Arnold had been primarily responsible for this last development, he had also been the leading advocate of a single supreme commander of all U.S. forces in the Pacific. In the effort to win approval for this principle he had failed: under the new arrangement there would not even be unified control of all air forces. But there was logic in the arrangement, for FEAF now combined the three air forces which

* See above, p. 35.

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would carry the main burden of tactical operations in support of the Japanese invasion, and USASTAF incorporated the forces for an expanding strategic bombardment designed to render that invasion unnecessary. Moreover, Kenney was the AAF's most experienced and distinguished leader in the Pacific war, and Spaatz, fresh from the victory in Europe, enjoyed an unequaled prestige in the field of strategic bombardment.

Preparations for OLYMPIC

While the decision on command was pending, MacArthur's staff, in consultation with Nimitz' representatives, made plans for the invasion of Japan. On 28 May, three days after receipt of the JCS directive, MacArthur issued a strategic outline which contemplated invasion of southern Kyushu (OLYMPIC) on 1 November 1945 and of Honshu (CORONET) on 1 March 1946.[68] The two operations were to be continued and extended until organized resistance in the Japanese archipelago was ended.

Although CORONET would depend heavily on forces redeployed from Europe, MacArthur planned to undertake OLYMPIC with forces already in the Pacific—chiefly those of his veteran Sixth Army. On D-day, Marine V Amphibious Corps was to land near Kushikino on the southwestern peninsula, Army XI Corps in Ariake Bay, and Army I Corps near Miyazaki on the east coast of Kyushu. The Twentieth Air Force, based in the Marianas and Ryukyus, was to continue its destruction of Japanese industrial power. Carrier air forces, starting at the earliest practicable date, were to make repeated attacks into critical areas of the archipelago to destroy hostile naval and air forces, interrupt land and sea communications, and attack strategic targets in cooperation with the Twentieth Air Force. Land-based air power in the Ryukyus was to neutralize hostile air forces in the Japanese islands and on the Asiatic mainland, interrupt and destroy shipping between Japan and the mainland, shatter communications, isolate southern Kyushu, and reduce defensive installations in the objective area.[69]

The Pacific Fleet staff study on OLYMPIC, dated 18 June, threatened to reopen the command controversy. MacArthur specifically disagreed with the statement: "When the Commanding General Expeditionary Troops . . . assumes command of the ground forces established ashore he will report to CINCAFPAC who then assumes

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command and responsibilities for the campaign in Japan." MacArthur announced that he intended to accompany the ground troops and meant to exercise control, as required, of the actual amphibious assault.[70] More immediate, however, was the problem of coordinating air operations against Japan. MacArthur proposed that the 135th meridian be used to divide the responsibilities of carrier planes and of FEAF, with the latter taking the area west of that line. Thus it would have been FEAF's sole responsibility to soften up Kyushu, although both Army and Navy planes might, with proper coordination, go after targets across the line. The Twentieth Air Force could operate in both sectors provided proper coordination had been made. In Nimitz' staff study, however, MacArthur discovered strong implications that the Navy wished to restrict AAF operations against shipping and to limit Army planes to land targets, a suggestion dismissed by Arnold as "one hell of a way to run a war."[71] Nimitz denied such an intent, but he insisted that his carriers must be free to cross into the Philippine, the East China, the Japan, and possibly the Yellow seas.[72] The Twentieth Air Force also thought the area restrictions cumbersome.[73] After USASTAF's establishment,* a conference at Manila on 1 August accepted most of MacArthur's ideas. The dividing line ran from Kinosaki on the north coast of Honshu southward through Himeji to the easternmost point of Shikoku, and USASTAF was to coordinate attacks against strategic targets. FEAF and carrier air generally were to attack tactical targets, and in an emergency any of the forces might hit a target without regard to location, informing the other forces as quickly as possible. After D minus 8, naval aircraft were to be employed primarily against targets in the area of amphibious assault, while FEAF was to operate outside this area and west of the dividing line.[74] MacArthur, still not quite satisfied, wanted the Navy made responsible for air defense of the objective area but with the understanding that FEAF aircraft might be employed in the area on strikes managed by a naval commander after D minus 8 if needed.[75]

As early as September 1944, General Whitehead had seen the strategic importance of the Ryukyus for an air campaign against Japan, and by the following February FEAF planners had worked out a study to determine what FEAF units could be based on Okinawa.[76] Both Kenney and Whitehead believed that the enemy might be whipped without redeployment from Europe if only, as Whitehead

* See below, p. 700.

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put it in a letter to Kenney of 8 April 1945, "we keep crowding him." Whitehead did not believe that the Japanese could be defeated solely by B-29 raids on their cities, nor did he believe that carrier air could effectively sever Japanese sea lanes to the mainland of Asia or prepare adequately for an invasion of Kyushu. The most efficient instrument for the preinvasion aerial offensive against Japan would be land-based air power concentrated in the Ryukyus. "I naturally believe," he added, "that the Fifth Air Force is the best equipped and best trained air force in the world to accomplish this job."[77]

Invasion of the Ryukyus, however, was a POA task, and the first land-based air units installed there would be Marine and Seventh Air Force organizations. The capture of Japanese airfields enjoyed high priority, and when the attack on Okinawa lagged shortly after the landings on 1 April, the seizure of nearby Ie Shima, desirable because of its three Japanese airstrips, was accelerated. A division landing at Ie on 16 April took this "most valuable eleven square miles of land in the western Pacific" in a six-day battle. Complete possession of Okinawa was delayed until late June,[78] and planes for tactical support of the ground campaign had first claim on captured Japanese air facilities. POA engineers found the Okinawa airfields both lightly surfaced and badly damaged. Although Yontan, one of the major fields, had virtually been destroyed by naval bombardment, hurried grading permitted Marine fighters to base there on 7 April. At Kadena the problem was even greater: coral to augment the thin Japanese surfacing could be had only after a difficult haul. But again the aviation engineers were most efficient: a strip was ready for dry-weather use in two days, and by 1 May, despite continuous bombing, strafing, and shelling, the engineers had it in all-weather operational condition. By 30 April the surface of the Japanese strips on Ie Shima had been restored and extensive mine fields removed. By 12 May an all-weather strip was ready there, and the following month two all-weather strips with crowded parking for over 450 planes were operational.[79]

Original plans had called for eight airstrips on Okinawa and two on Ie Shima, with additional airdrome areas to be taken on Miyako Island as a third-phase operation. On 9 April, however, the Tenth Army reported excellent sites for VHB bases on Okinawa, and with JCS approval the Miyako operation was suspended on 26 April.[80] Sites for twenty-two runways on Okinawa and Ie Shima were found by the Fifth Air Force engineer, who warned that topographical conditions

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would require half again as much construction effort as usually was employed in SWPA to build standard airfields.[81] By an agreement between Nimitz and MacArthur on 16 May, fields in the Ryukyus were to be developed for fifty-one air groups, including twenty-nine Fifth and Thirteenth Air Force groups which would move forward as soon as facilities were ready;[82] on 4 June eleven airstrips were committed to FEAF, six to B-29 groups, and three to Navy and Marine units. An air depot was to be built at Naha for joint use by FEAF and the redeployed Eighth Air Force. After further reconnaissance of the island, FEAF agreed to reduce its pre-OLYMPIC air group objective for the Ryukyus to twenty-one and three-fourths groups.[83]

To build so many airfields in so short a time required the largest aviation engineering project ever attempted. There were to be some twenty-five miles of paved airstrips, while the hardstands, taxiways, and service aprons would require a paved area equal to 400 miles of a two-lane highway. Some five and a half million truckloads of coral and earth would have to be moved. And there were the usual difficulties: heavy rains at the end of May forced suspension of airfield work until mid-June, while engineer units kept roads open for the Tenth Army; by 22 June, moreover, only 31,400 of 80,000 scheduled construction troops had reached Okinawa.[84] After Arnold interceded with Nimitz on this point, aviation engineer shipments were accelerated, including the eight battalions which AFPAC was moving forward, and on 11 July Kenney could write Arnold that new fields were "appearing like magic and construction is going on faster than I have ever seen it before."[85] Transfer of the Ryukyus to MacArthur on 31 July was managed without delaying the works program; AFPAC merely redesignated the island command as AFWESPAC's Army Service Command I without other reorganization.[86] Construction agencies were also allowed wide freedom of action.[87] Hardstands at Machinato airdrome, for example, were reduced in number and increased in size to accommodate planes at an earlier date.[88] By 6 August, six of the new airfields were operational and most projects were due to be completed by mid-October.[89]

Marine, Navy, and Seventh Air Force tactical units had moved into the Ryukyus as quickly as enemy airfields could be made ready. The Tenth Army Tactical Air Force (Task Group 99.2), which was headed by a Marine air general, exercised operational control of all tactical air units. Its principal components were the Air Defense

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Command, Okinawa (Task Unit 99.2.1), the bomber command (Task Unit 99.2.2), and the photo unit (Task Unit 99.2.5). The Air Defense Command, also under a Marine, controlled, in addition to the 2d Marine Air Wing's Groups 14, 22, 31, and 33, the 301st Fighter Wing, whose 318th Group came up from the Marianas and whose 413th and 507th Groups arrived at Ie Shima fresh from the U.S. during May and June. The bomber command, under Col. Lawrence J. Carr, was actually VII Bomber Command: it comprised the 11th (B-24) and 41st (B-25) Bombardment Groups, redeployed from the Marianas, and the 494th (B-24) from the Palaus; all three groups went into action during the first ten days of July. The last unit of VII Bomber Command to reach Okinawa was the 319th Bombardment Group, a medium bomber unit redeployed from Italy; re-equipped in the U.S. with new A-26's, the 319th flew its first mission from Okinawa on 16 July. The fighters could be crowded into Ie Shima, but it was much more difficult to base the bombers. The 41st and 319th Bombardment Groups used Kadena strip, a future B-29 field, until Machinato could be captured and repaired. The heavy bombers based at Yontan, while Marine fighter groups shared both Yontan and Kadena until they could move to their new bases at Chimu and Awase. The photo unit's principal organization, the 28th Photo Reconnaissance Squadron, began arriving at Ie Shima from Oahu on 23 April.[90]

Convinced that "speed is important" and suspecting that Nimitz might attempt to monopolize airdrome space for short-range defense planes,[91] General Whitehead had planned to rush his Fifth Air Force planes forward as soon as he could find space for them. Brig. Gen. D. W. Hutchison opened the 308th Bombardment Wing Headquarters at Okinawa on 15 June, and simultaneously was recognized as Commanding General, Advon, FEAF.[92] A stream of radiograms alerted units in the Philippines, and by 2 July the 35th Fighter Group was at Yontan with seventy-seven P-51's, after a movement so speedily managed that Nimitz did not learn of it until Hutchison filed intent for a second fighter sweep to Kyushu.[93] After this initial sprint, however, Whitehead insisted that aircrews not move forward until some sort of ground echelon was in place.[94] Although this policy slowed the northward movement of combat units, by the end of the war four Fifth Air Force fighter groups and two night fighter squadrons had begun operations from the Ryukyus—the 35th Fighter Group on 3 July, the 348th Fighter Group on 14 July, the 58th Fighter Group

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and 418th Night Fighter Squadron on 28 July, the 421st Night Fighter Squadron on 8 August, and the 8th Fighter Group on 10 August. Like those of the Seventh Air Force, these units operated from improvised airfields, often flying from runways which were still under construction. The 35th and 58th Fighter Groups camped near Machinato airdrome, which was not usable until 15 August; the 35th flew from Yontan and the 58th from Kadena and Bolo; the 348th and 8th Fighter Groups operated from Ie Shima.[95]

Since AFPAC had agreed to perform the aerial photography needed by the ground troops for the Japanese campaign,[96] movement of the 91st Reconnaissance Wing and its units into the Ryukyus was expedited in July and August.[97] By the end of July, the 38th and 345th Bombardment Groups (L) and the 43d Bombardment Group (H) were flying from Ie Shima; 101 B-24's of the 22d, 90th, and 380th Bombardment Groups reached Okinawa on 23 July, but when movement of the water echelons of these groups dragged on into August, flight crews had to operate as best they could without proper maintenance. The short and uphill strip used by the bombers on Ie Shima added to the difficulties of the aircrews. The 386th Bombardment Squadron flew its new B-32's from Yontan strip during the last several days of the war.[98]

On 14 July, most of its tactical units having reached Okinawa, the Seventh Air Force was formally transferred to FEAF.[99] Under a new commander versed in SWPA air operations, Brig. Gen. Thomas D. White, the Seventh for the first time was to operate as an integrated air force under AAF leadership.[100] Even though VII Fighter Command came to FEAF in name only, the Seventh Air Force did get some fighters: by prior agreement the 301st Fighter Wing was attached to it.[101] FEAF also assigned the 373d Bombardment Squadron, a B-24 "snooper" unit transferred from China, to the Seventh Air Force and the 494th Bombardment Group on 22 July.[102] After the Tenth Army Tactical Air Force was dissolved on 14 July, Nimitz passed responsibility for air defense of the Ryukyus to Task Group 99.2, now limited to units of the 2d Marine Air Wing.[103] On 31 July, when MacArthur took control of the Ryukyus, these air defense units and their function passed to FEAF and thence to the Seventh Air Force. By this reorganization the Seventh Air Force, long accustomed to operating under the control of Navy and Marine air commanders, found itself operating a number of Marine tactical units.[104]

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To effect tactical coordination of the air units in the Ryukyus, General Whitehead assumed command of Advon, FEAF, on 16 July,[105] and thereafter made himself general manager of the air war from Okinawa. A joint operational conference was held daily at his headquarters, where the targets, if a complaint of the Seventh Air Force intelligence officer may be trusted, "were pulled out of Whitehead's back pocket."[106] A loosely ordered direction of operations from advanced bases was nothing new to the Fifth Air Force, and Whitehead's continued dependence on Fifth Air Force personnel made his headquarters in effect another outpost of that air force. The last echelon of Seventh Air Force headquarters reached Okinawa on 28 July, but it had never before controlled its units in combat and was slow to get under way.[107] Shipping difficulties delayed complete movement of the headquarters of the Fifth Air Force and its subordinate commands to Okinawa until 4 August, when the air force command post opened near Motobu. The two air force headquarters were only beginning to function normally when the war ended.[108]

The Air War from Okinawa

Whitehead's instructions for employment of FEAF from the Ryukyus were of broad scope—to conduct counter-air force operations against the Japanese Empire, to attack enemy shipping lanes in order to isolate Japan from Asia, to interrupt land communications in Kyushu and western Honshu, to destroy or neutralize military concentrations and vital installations in the same area, to conduct aerial reconnaissance and photography, and to provide air protection for naval forces as requested by CINCPAC.[109] Effective 20 July (after such attacks had already begun), MacArthur authorized FEAF to strike air installations, rail, road, and water communications, industries, and port facilities in China and Korea, north of the line Shanghai-Nanking. After neutralizing enemy air power, FEAF was expected to blockade the Yangtze River, destroy port facilities on the Korean coast, and knock out rail repair facilities. Area bombing of Chinese cities was forbidden.[110] Whitehead's own plan was to destroy enemy air power within the arc from Nagoya to the Siberian border in three phases of intense fighter and medium bomber activity. After lucrative air force targets had been exhausted, he planned to turn his fighters and attack bombers against rail communications within the same area. He was especially anxious to avoid a "leak" of his plans to the Navy,[111]

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but this did him no good; he got orders to concentrate on Kyushu airfields to cover Third Fleet carrier strikes against Japan.[112]

Neutralization attacks on the enemy's Kyushu-based air had been begun by two Seventh Air Force P-47's on the night of 17 May. Although the P-47's lacked radar equipment and homing aids needed for night intrusions, such heckling missions continued until 16 June, when the 548th Night Fighter Squadron and its better-equipped P-61's arrived at Ie from Iwo Jima to undertake the task. Day fighter sweeps, undertaken soon after the inauguration of night attacks, were at first hotly contested by Japanese fighters, despite the concentrated B-29 attacks on their airdromes. During the week ending 13 June planes of the 318th Fighter Group were intercepted by 244 Japanese aircraft over Kyushu, of which the P-47's shot down 48 at a loss of 3 of their own number.

On 21 June P-47's of the 413th Fighter Group joined in the sweeps,[113] and on 1 July Seventh Air Force bombers and the 507th Fighter Group arrived. The Japanese quickly lost their aggressiveness. On 2 July, forty-seven P-47's escorting five reconnaissance B-24's were intercepted by sixteen enemy fighters, but the latter showed little inclination to give battle. It was also evident that the Japanese once more were following a policy of wide dispersion to escape bombardment. During the first two weeks of July the AAF bombers could claim no more than two Japanese planes destroyed on the ground, and they met no enemy aerial opposition. Only minor flak damage bothered the 286 medium and heavy bomber sorties flown against Kyushu between 1 and 13 July.[114] By 14 August, V Fighter Command, which began flying against Kyushu on 3 July, had destroyed thirty-two airborne planes, losing only one plane to air interception, four to hostile AA, and fourteen to unknown or operational causes. Failing to meet serious resistance in the air, AAF fighters had quickly turned to "general Hell raising"—attacks on rail communications, bridges, shipping, and other such targets of opportunity.[115] Reconnaissance fighters on at least two occasions reported that they had strafed civilians in the fields and on the roads.*

* Following the announcement of the formation by the Japanese of a Peoples Volunteer Corps, making all men from 15 to 60 and women from 17 to 40 liable for defense duties, Col. Harry F. Cunningham, A-2 of the Fifth Air Force, had declared in an official intelligence review on 21 July that "the entire population of Japan is a proper Military Target . . . , THERE ARE NO CIVILIANS IN JAPAN. We are making War and making it in the all-out fashion which saves American lives,

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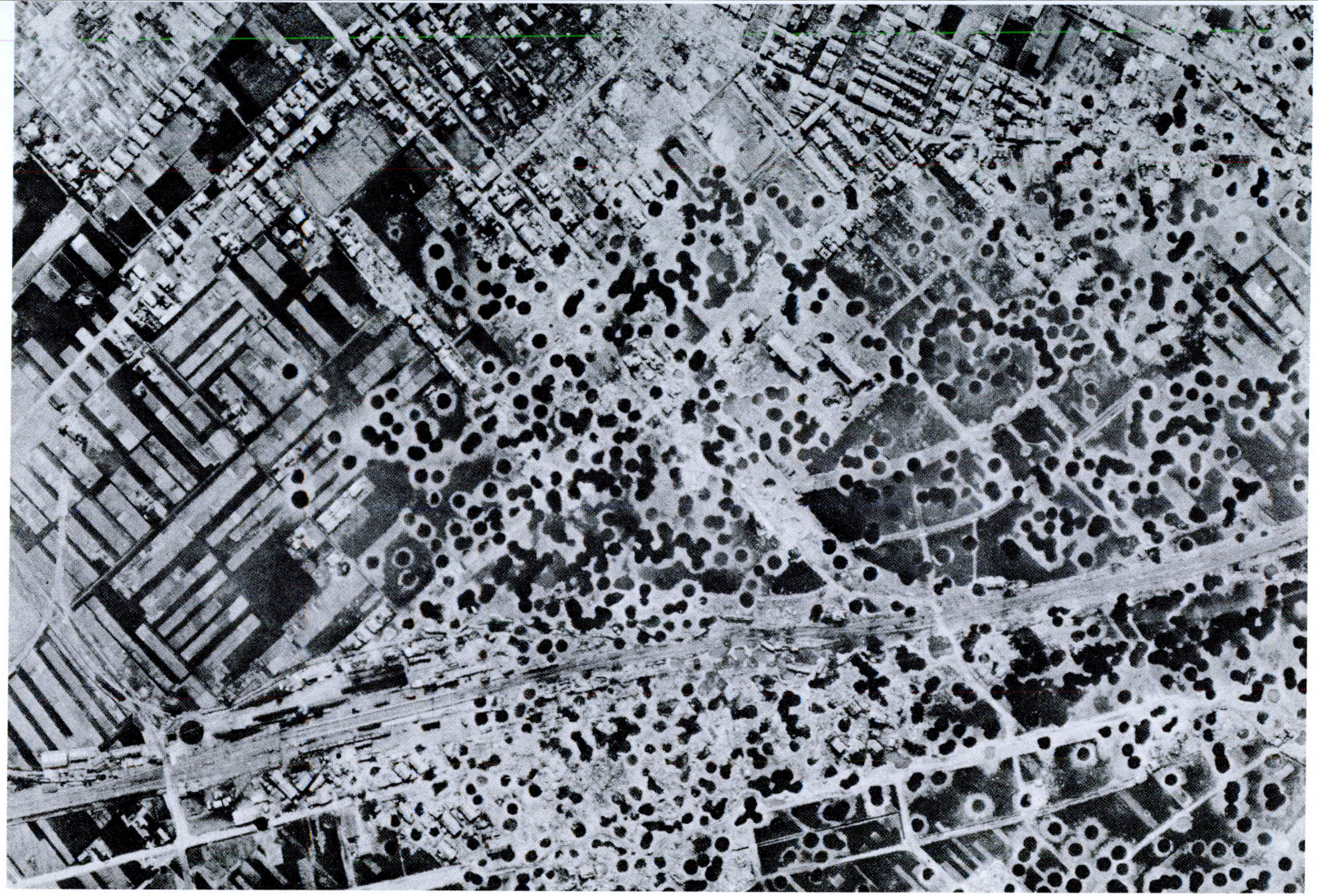

LAST DAY: ATTACK ON MARIFU RAIL YARDS, 14 AUGUST 1945

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WAR DEPARTMENT
OFFICE OF THE CHIEF OF STAFF
WASHINGTON 25, D. C.

25 July 1945

SECRET
T.A.G.
11 DEC 1945

TO: General Carl Spaatz
Commanding General
United States Army Strategic Air Forces

1. The 509 Composite Group, 20th Air Force will deliver its first special bomb as soon as weather will permit visual bombing after about 3 August 1945 on one of the targets: Hiroshima, Kokura, Niigata and Nagasaki. To carry military and civilian scientific personnel from the War Department to observe and record the effects of the explosion of the bomb, additional aircraft will accompany the airplane carrying the bomb. The observing planes will stay several miles distant from the point of impact of the bomb.

2. Additional bombs will be delivered on the above targets as soon as made ready by the project staff. Further instructions will be issued concerning targets other than those listed above.

3. Dissemination of any and all information concerning the use of the weapon against Japan is reserved to the Secretary of War and the President of the United States. No communiques on the subject or releases of information will be issued by Commanders in the field without specific prior authority. Any news stories will be sent to the War Department for special clearance.

4. The foregoing directive is issued to you by direction and with the approval of the Secretary of War and of the Chief of Staff, USA. It is desired that you personally deliver one copy of this directive to General MacArthur and one copy to Admiral Nimitz for their information.

Thos Handy
THOS. T. HANDY
General, G.S.C.
Acting Chief of Staff

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THE ATOM BOMB DIRECTIVE

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Fifth and Seventh Air Force bombers attacked enemy airfields and railroad marshalling yards on Kyushu and in the Shanghai and Hangchow areas of China. Seventh Air Force bombers flew 784 sorties and dropped 961.1 tons of bombs on Kyushu's airfields and another 489 sorties with 667.5 tons of bombs on China air and transportation targets. Fifth Air Force bombers made 138 sorties with 150.8 tons against Kyushu airfields.[116] Probably the hardest-hit transportation target on Kyushu was Kagoshima, one of the principal port and rail cities of the island and site of a rail repair center of local importance. Between 17 July and 6 August the Seventh Air Force placed 211 effective sorties over the town, dropping 325 tons of bombs and 15,840 gallons of napalm. Twenty-one Fifth Air Force B-24's attacked the railway yards there on 31 July.[117] The railroad bridge at Nobeoka, a critical 1,485-foot span on Kyushu's east coast, was bombed by Seventh Air Force B-24's on 16 and 29 July and further damaged to near impassability by 318th Group P-47's on 11 August. After much effort the Seventh Air Force finally destroyed the road bridge at Miyazaki, but it remained unable to cut the railway bridge there. Rail terminals in Nagasaki's port area were successfully bombed by Seventh Air Force B-24's on 31 July and 1 August, a week before the atom bomb fell.[118]

All types of FEAF planes helped enforce the shipping blockade of southern Japan. Seventh Air Force P-47's had begun shipping sweeps to the Chusan archipelago on 30 June and had made three more missions there before 13 July. Three P-47's were lost to destroyer fire in these forays. On 22 July three groups of 301st Wing fighters joined the 41st Bombardment Group in a raid against a convoy at the mouth of the Yangtze River, reporting hits on several merchant ships and one destroyer and fires in the nearby dock and oil storage areas. The 41st Group also experimented with newly developed glide torpedoes, which could be released at medium altitudes and at great distances from a target, in not too successful efforts against Sasebo, Makurasaki, and Nagasaki harbors.[119] Fifth Air Force fighters made shipping attacks off the China coast, and between 28 July and 14 August five P-51 shipping sweeps were flown to the coasts of Korea.[120] Night-flying B-24's of the 63d and 868th Squadrons (the latter belonging to

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shortens the agony which War is and seeks to bring about an enduring Peace. We intend to seek out and destroy the enemy wherever he or she is, in the greatest possible numbers, in the shortest possible time." (Fifth Air Force Weekly Intelligence Review, No. 86, 15–21 July 1945.)

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XIII Bomber Command) went into action on 26 July and 7 August, with night sorties to Korea. The redeployed 373d Bombardment Squadron, however, brought inexperienced crews and was confined to night patrols over the Inland Sea.[121] On 28 July, in a mission understandable only as competition with the Third Fleet, which had attacked the targets on the 24th and was again attacking them that day, seventy-nine FEAF B-24's attempted to bomb Japanese capital ships anchored at Kure. The only results recorded by the Japanese were four bomb hits which chopped the stern off the cruiser *Aoba*, a ship already grounded as a result of the earlier carrier attacks. Most of the vessels in the anchorage had been hopelessly damaged, but their crews put up a "most terrific curtain of flak" which brought down two Seventh Air Force B-24's and damaged fourteen others.[122]

While FEAF was principally committed to tactical targets of value to OLYMPIC, it did not ignore industrial opportunities. On 7 August twenty-three B-24's of the 11th Group, covered by eighteen P-47's of the 301st Wing, raided the Mitsui Coal Liquefaction Plant at Omuta, one of the largest of its kind in Japan and a producer of 60-octane gasoline for the Japanese Army. Air photos revealed most bombs off the target, but postwar interrogation disclosed that one lucky hit had severed a gas line and that the plant was still out of operation seven weeks later. The Miike Dyestuffs Plant just north of the aiming point, moreover, had been severely damaged, and coal-washing equipment destroyed had caused a restriction of about 500,000 tons in the output of the Miike and Takashima coal fields.[123] Possibly the most spectacular FEAF air actions against Kyushu were incendiary attacks upon urban targets, ostensibly to destroy industrial plants. On 5 August combined Fifth and Seventh Air Force missions struck Tarumizu where a factory was reported to be making rocket suicide planes. Sixty-three B-24's, eighty-four B-25's, thirty-two A-26's, ninety-seven P-47's, and forty-nine P-51's covered the town and factory site with general-purpose and napalm bombs. A similar raid in lesser number by Seventh Air Force planes fired Kumamoto on 10 August; next day the two Seventh Air Force heavy groups put fifty-three B-24's over Kurume with incendiaries. As ground reconnaissance later revealed, the mission had been entirely successful: fanned by a northeast wind and with the water supply cut off by a power disruption, the flames had destroyed 28 per cent of the homes of the city, leaving 20,023 persons (26 per cent of the population)

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homeless.[124] It seemed that FEAF planes were prepared to obliterate whatever the B-29's may have left of Japan's urban centers.

On 4 August, two days before the first atomic bomb exploded, Fifth Air Force pilots reported that Japanese civilians were waving white flags from their fields and villages.[125] On 10 August the Japanese radio announced the Japanese desire for peace, and next day President Truman suspended USASTAF operations, although FEAF was allowed to continue until 12 August. FEAF was ordered to attack once more on 14 August, but early on the next day a cease-fire order came through and efforts were made to call back the few planes already out. Reconnaissance was to be continued, however, and crews were to fight back if attacked.[126] On 17 August four 3d Group B-32 Dominators, flying one of their first missions from Okinawa, were attacked by fifteen enemy fighters while reconnoitering Tokyo; B-32's were again attacked on the 18th, and in the two days' actions the Dominators shot down at least three planes. Then, at 1245 hours on 19 August, two white Betty's set down at Ie Shima with the Japanese envoys commissioned to sue for peace.[127] Surveillance missions were continued without incident except that two 49th Fighter Group pilots, violating their orders under a plea of need for fuel, landed on 25 August at Nittagahara airdrome, Kyushu, where the Japanese greeted them with candy.[128]

The Japanese surrender came while FEAF was still building up its Ryukyus garrison for a full-scale attack. While the Seventh Air Force was nearing its peak capacity, the Fifth had flown only 1,993 sorties against Kyushu, expending 1,491.7 tons of bombs and 64,030 gallons of napalm.[129] Between 1 July and 31 August the Seventh Air Force had flown 4,442 sorties.[130] Plane losses were amazingly light: the Fifth Air Force lost only ten planes to enemy action in July and twenty-one during August;[131] the Seventh Air Force lost ten planes to enemy AA and two to enemy interceptions during the same two months.[132] Altogether, FEAF had distributed 7,100 tons of bombs over half-a-dozen target systems: only 15 per cent of its effort had been directed against railroads, 9 per cent against shipping, and another 9 per cent against port areas; an unnecessarily large percentage of the effort had been devoted to attacks on industrial and urban targets, none of which were of major importance to the defense of Kyushu. After the war USSBS concluded that FEAF might better have concentrated against rail targets, ten of which (five yards and five bridges) were vital to

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both military and economic traffic between Honshu and Kyushu.[133]

In defense of FEAF, it must be noted that its air units were still feeling out Japanese resistance when the war unexpectedly ended. A systematic USASTAF-FEAF transportation assault had been planned, and the first USASTAF operation of the series took place on the last day of the war.[134] It was recognized that the Kammon Tunnel between Kyushu and Honshu was the most important single transportation target in Japan,[135] but the target was being saved until four disguised air rescue boats, remotely controlled and each loaded with 25 tons of high explosives, could be run into the west entrance of the tunnel and detonated. This project was canceled as the war ended.[136] FEAF had also intended to emphasize napalm attacks, of proved worth in the Philippine campaigns, but there was time only for the preliminary tests. The Japanese already were licked. As Whitehead summed it up, the enemy "could decide that enough Nips had been killed or he could commit national suicide. He chose the former."[137]

USASTAF

Although the reorganization of USASTAF had not been completed by V-J Day, General Spaatz had made much progress in his command arrangements. He had arrived in the theater on 29 July and by 1 August had organized his staff at Guam: Lt. Gen. Barney M. Giles was deputy commander; Maj. Gen. Curtis E. LeMay, chief of staff; Brig. Gen. Kenneth P. McNaughton, A-1; Brig. Gen. Norris B. Harbold, A-2; Brig. Gen. Thomas S. Power, A-3; Brig. Gen. Charles L. Booth, A-4; and Brig. Gen. Richard C. Lindsay, A-5.[138] Headquarters of the Twentieth Air Force in Washington had become USASTAF Rear on 16 July only to be inactivated on 20 August. At the same time USASTAF Administration at Hickam Field, which had served to bridge the gap between AAFPOA and USASTAF, came to its end, and Guam in every sense became the headquarters of AAF strategic bombardment.[139] As in Europe, Spaatz aimed at establishing a streamlined headquarters with small staff sections responsible for planning and supervision. He viewed his mission as primarily that of coordinating the operations of his own forces with those of MacArthur, Nimitz, and Kenney.[140] Consequently, he delegated broad responsibility for day-to-day operations, both administrative and combat, to the Eighth and Twentieth Air Forces.[141]

Plans called for the creation of two strategic air forces with identi-

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cal strength, each consisting of five B-29 wings, a fighter command, and a service command with a depot. Lt. Gen. Nathan F. Twining, formerly commander of the Thirteenth Air Force and then of the Fifteenth, replaced LeMay in command of the Twentieth Air Force on 2 August. The new Twentieth Air Force, the old XXI Bomber Command plus the fighters of VII Fighter Command, had already come into being on 16 July as a full-fledged fighting force, though the war ended before it achieved full strength with a service command and supplementary fighter groups. Lt. Gen. James H. Doolittle established the command post of his Eighth Air Force at Okinawa on 19 July, and the first elements were nearing combat readiness as the Japanese surrendered. Of units scheduled to be in place on 15 August, the air echelon of the 316th Bombardment Wing had arrived, and the aircrews of the 333d and 346th Bombardment Groups had begun to fly into Kadena on 7 August. The Eighth Air Force assumed command of the 301st Fighter Wing on 17 August. According to program, the Eighth would have reached maximum strength in February 1946.[142]

During its short period of operations, USASTAF had generally harmonious relations with FEAF. Airfield construction on Okinawa was managed to the satisfaction of both, a satisfactory plan was worked out for joint use of the air depot at Naha, and cooperative plans for air-sea rescue were managed. Conferences between Generals Spaatz and Kenney resulted in agreements whereby FEAF would furnish USASTAF its daily air intent. More important, however, was the "complete agreement" between the two air generals "that the Army Air Forces in the Pacific would present a unified front to all comers."[143]

The establishment of USASTAF did not provide an immediate solution for most of the difficult logistical problems which the VHB wings had faced since their arrival in the theater. USASTAF was charged with "internal" logistic support but was to look to CINCAFPAC and CINCPAC for "theater" support. The very terms lacked as yet any clear definition. It was the AAF view that "logistical support" included all phases of military operations not covered by the terms "tactics" and "strategy" and properly consisted of such things as supply, construction, maintenance, transportation, traffic control, area administration, and allied subjects. It was also the AAF view that everything which moved to an air force should be regarded as "ex-

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ternal" or "theater" logistical support, whereas everything which moved within the air force organization on air command channels should be regarded as "internal" support.[144] What practical interpretation would be given their respective responsibilities by MacArthur and Nimitz was not fully clear when the fighting stopped. One particularly grave controversy arose over the assignment of support troops. USASTAF felt that a large number of support troops would be needed to maintain its combat strength and was reluctant to relinquish control of such units to AFMIDPAC. AFMIDPAC insisted that it could not transfer any of its scarce support units unless it were relieved of the task of providing USASTAF with "theater" logistical support. The seven weeks' history of USASTAF was marked by other conflicts with theater authorities over several additional problems of administration and logistics.[145] And some of the problems, no doubt, eventually would have required settlement by the JCS had it not been for the early surrender of Japan.

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CHAPTER 23

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VICTORY

DURING the spring and summer of 1945, while the air attack against Japan was steadily mounting in intensity, U.S. political and military leaders were searching for means to bring the war to a successful and early ending. The surrender of Germany on 8 May robbed Japan of her only ally and made available for redeployment in the Pacific vast Allied ground, air, and naval forces; the progressive deterioration of Japan's air and sea power left as her only source of strength a large and undefeated army. To some civilian leaders in the United States it seemed that if a proper formula could be worked out, the enemy might be brought to surrender without an invasion of the home islands, and this view was shared by many in the AAF and the Navy who were confident of the persuasive powers of the aerial attack and the blockade. Other leaders, while not discounting the possibility of a sudden collapse, believed that such a cheap victory was not probable, at least within the eighteen months allotted in the planning tables. The latter view finally prevailed as the accepted military policy: planning for an invasion of Kyushu (OLYMPIC, November 1945) and later of Honshu (CORONET, March 1946) was pushed vigorously, and the decision was taken in June and confirmed in July to mount the first of those assaults.

Then, on 6 August, a B-29 dropped on the city of Hiroshima a single bomb of unprecedented destructiveness. Three days later a second bomb, of like nature but somewhat more efficient, was dropped on Nagasaki. In each case the attack caused tremendous physical damage and great loss of life. The extent to which these attacks were responsible for the Japanese surrender is, like any complex historical problem, a question to which no universally acceptable answer can be given, but it is almost literally true that the war ended with Hiroshima and Nagasaki.

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Within the written memory of man there had been no improvement in weapons comparable in degree and suddenness. It had taken gunpowder a century to revolutionize war, the airplane a generation. The new weapon, whose popular designation as "atom bomb" forestalled any chance of a more scientifically accurate nomenclature, threatened to do that overnight—and, indeed, to destroy civilization if used in large numbers. So dread were the threats for the future that it became difficult to think of the new weapon as an instrument of the war just ending. It was not, the scientists said, "just another bomb." But in spite of its horrible power, it *was* another bomb and it was delivered pretty much as hundreds of thousands of other bombs had been delivered—by a B-29 operating out of the Marianas. It is appropriate, then, to relate here so much of the atom bomb story as pertains to the AAF and to try to evaluate the importance of the attack in helping to force the surrender of Japan. This account will not involve the story of what President Truman called "the battle of the laboratories," a most important and absorbing story but one which has been told before and in which the AAF played only a minor role.[1] In respect to the military side of the atom bomb story, which alone is pertinent here, there are still security regulations outside the control of the U.S. Air Force of a sort which have never been enforced upon earlier chapters and volumes of this series. The authors have had access to the AAF records in regard to the employment of the bomb, but some of the tactical and technological details are lacking; because of the unusual security measures in effect, much that was important was not put in writing, and in respect to the political decision to use the bomb, the authors are limited in the main to such published accounts as have appeared. In spite of lacunae in the evidence, however, the main outlines of the AAF's role in the two attacks can be told in sufficient detail.

The Atom Bomb

Governmental interest in nuclear fission for military purposes was initiated in the United States by a letter, dated 2 August 1939, to President Roosevelt from Dr. Albert Einstein. The celebrated physicist referred to the possibility of constructing from uranium a bomb of tremendous power; "however," he added, "such bombs might very well prove too heavy for transport by air," apparently contemplating their delivery by ship or use as concealed land mines.[2] As research in nuclear fields progressed, this view was modified; scientists turned

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more to the idea of an aerial bomb, and after the establishment in the spring of 1943 of the laboratory at Los Alamos, Dr. J. R. Oppenheimer's staff there was concerned with producing such a weapon. Though most of the early work was theoretical, it was obvious that the bomb would be large as aerial bombs went; this realization, and perhaps the factor of range, suggested the use of the B-29 as the best carrier available. Maj. Gen. Leslie R. Groves, who as director of the so-called Manhattan Engineer District was in general charge of the development of the bomb, informed General Arnold of the project and made him responsible for the modification of the plane, for ballistics tests on the bomb, and for organizing and training a special combat unit which under appropriate field commanders might eventually use the bomb. By September 1943 the decision to use the B-29, only recently put into production, had apparently been made final, and work on the special planes began early in 1944 with an eventual goal of fifteen aircraft. The modifications were substantial but not radical: the atom bomb was tailored to fit the plane rather than the reverse.[3]

The task of organizing the special combat unit got under way in the summer of 1944. The ultrasecret nature of the project and its potential importance called for personnel of the highest qualifications and the process of recruiting resembled in many respects the mustering of the first B-29 units a year earlier.* To head the team, Arnold named Col. Paul W. Tibbets, Jr., a superb pilot with a distinguished record in the pioneer 97th Bombardment Group (H) in Europe and North Africa, who was currently testing B-29's at Eglin Field. His deputy, Lt. Col. Thomas J. Classen, was a veteran of the Pacific war; many of the key officers were members of Tibbets' former group and others were handpicked for various outstanding qualifications. Tibbets alone knew the real mission of the team; the others apparently knew no more than that they were to drop a special sort of bomb which they came to call "the gimmick." In the interest of security, Tibbets chose Wendover Field, Utah, as a training base. Security discipline, both in contacts with the outside world and within the base, was rigid and, as events were to prove, most successful.[4]

The core of the team was to consist of a normal B-29 squadron, but to give it as much independence (and hence secrecy) as possible, the organizational plan was expanded to include a number of supporting

* See above, pp. 53–55.

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units. Choice for the combat element fell on the 393d Bombardment Squadron (VH), already well along in its training program at Fairmount Army Air Field, Nebraska. In September the squadron moved to Wendover, where it served as the nucleus for the specially organized 509th Composite Group, activated by Tibbets on 17 December. The group included, besides the headquarters and the 393d, the following units: the 390th Air Service Group (made up of the 603d Air Engineering Squadron and the 1027th Materiel Squadron); the 320th Troop Carrier Squadron; the 1395th Military Police Company (Aviation); and after 6 March 1945, the 1st Ordnance Squadron, Special (Aviation), guardian of the bomb. In many instances existing T/O's had to be modified to suit the unique mission of the 509th. In sum, the group had an authorized strength of 225 officers and 1,542 men; by May there was a slight surplus of personnel, and in June the total was increased by the assignment of the 1st Technical Detachment, War Department Miscellaneous Group—a team of scientists and technicians, some military, some civilian.[5]

The normal training of the 393d Squadron was completed at Wendover in December. Bombing runs were made at a nearby range to test the ballistics qualities of experimental models of the bomb, loaded only with an inert filler. In January the squadron took ten B-29's to Batista Field, Cuba, for further training, which included visual and radar bombing from very high altitudes and long overwater simulated missions but not—and this was significant for the future—formation flights. After returning to Wendover, the squadron was processed for oversea shipment and in May was equipped with combat-modified B-29's. Some of the modifications were special to the squadron, but it shared with all other units in the 315th Bombardment Wing (to which the 509th Group was attached during training) the dubious honor of having its planes stripped of all turrets and guns except the twin .50-caliber tail guns.[6] By the end of May, Maj. Charles W. Sweeney, the squadron commander, had his unit ready to move out.

In February it had been decided to base the 509th Group at North Field, Tinian, into which the 313th Bombardment Wing was then moving. Because of the mystery surrounding the group's mission, AAFPOA had had some difficulty in securing priorities for the special construction needed.* Col. Elmer E. Kirkpatrick, a Twentieth Air

* See above, p. 525.

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Force engineer, flew out in March to expedite the building program, which included storage and laboratory facilities for the bomb. The first ground echelon of the group sailed from Seattle on 6 May and arrived at Tinian on the 29th to find that the advanced air echelon had flown in on the 18th. The combat crews began checking in on 11 June, flying out in their own B-29's. During the same month most of the group's personnel arrived, though the movement was not completed until the end of July.[7]

According to the group historian, the sight of Tinian with its lush vegetation and its quonsets pleased both those airmen making their first overseas tour and veterans from other theaters to whom "it looked like the Garden of Paradise." For New Yorkers the illusion may have been enhanced by the fact that the island bore a slight resemblance in shape to Manhattan, a similarity which had caused some fanciful engineer to use familiar names in designating the military thoroughfares. After several moves the 509th Group settled down in early July in what might be called the Columbia University district, south of 125th Street and adjacent to Riverside Drive. More to the point, the location was close to the strips and hardstands of North Field.[8] These facilities the group shared with the 313th Wing, to which it was now nominally assigned although most orders came from XXI Bomber Command or later from the Twentieth Air Force and USASTAF. The command channels, indeed, were highly irregular: in the last crucial missions the decision was made by the President himself; the JCS as a body was not involved, and the two important officials above Arnold were Groves and his civilian chief, Secretary of War Henry L. Stimson, with whom Arnold consulted either alone or accompanied by General Marshall. The chain of command was ill understood at Tinian and apparently at Guam; even after the surrender an official report from USASTAF declared that "due to the fact that the atomic bomb program circumvented established command channels for the most part, because of its necessary secrecy, little is known at this level of the authority, which must have originated at a level of approximately the Big Three."[9] The peculiar command arrangements, the partial geographical separation, the special aircraft insignia, the rigid security measures, and the failure to participate in ordinary combat missions—all these stamped the 509th Group with a special character which (one may guess) its members did little to deny but which brought them something of the ridicule usually re-

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served in the military world for the abnormal unit and here epitomized in a satirical verse entitled "Nobody Knows," with a recurring refrain, "For the 509th is winning the war."[10]

Upon arrival at Tinian combat crews were put through the regular seven-day indoctrination program conducted by the 313th Wing for new arrivals. Combat flight training began on 30 June and the first phase was completed by 22 July. For most crews this involved five or six practice missions: a navigation training flight to Iwo Jima, bombing Rota on the return; two or more short bombing missions against Rota or Guguan; and one long bombing mission against Truk and one against Marcus. The missions were run in flights of from two to nine planes. Instead of the large dummy bombs used in stateside training, the planes carried regular 1,000- or 500-pound GP's. While the tactical accomplishments were insignificant save as they contributed to the routine heckling of bypassed islands, training results on the whole were gratifying, reflecting the high experience level of the crews.[11]

On 20 July the 509th Group began a series of combat strikes over Japan, the purpose of which was to familiarize crews with the target areas and tactics contemplated for the final missions and to accustom the Japanese to the sight of very small formations of high-flying B-29's. The group S-2 received from XXI Bomber Command a series of "frag plans," tentative operational plans each involving a precision attack against pinpoint targets in the general neighborhood of, but never within, the cities chosen for the atom bomb attack. These outline plans were completed by 509th Group staff officers, who rightly considered the targets "leftovers" from other target lists. In all, some twelve strikes were sent out on four days—20, 24, 26, and 29 July—involving from two to six planes against each target. Most of these were at or near towns already hit by other B-29 strikes, precision or area: Koriyama, Nagaoka, Toyama, Kobe, Yokkaichi, Ube, Wakayama, Maizuru; two were at unfamiliar locations, Fukushima and Niihama.[12]

These missions were planned to simulate the final attack in all possible details: navigational procedure, individual approach at high level (usually about 29,000 feet), visual release, and radical break-away immediately thereafter.[13] The size and form of the atomic bomb are still classified information, but on these missions where according to published information the group dropped "TNT-filled bombs with

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ballistics similar to the atomic bomb," the 509th Group used a light case 10,000-pound projectile whose effects have been described by USSBS. The group called it a "pumpkin," "pumpkin-colored, pumpkin-shaped"; of the color there is no reasonable cause for doubt, but any layman with a memory of Halloween and a rudimentary concept of ballistics may consider the description of the form fanciful.[14] Whatever the projectile, the performance record was exceptional. Out of thirty-eight sorties there was only one abort; twenty-nine planes bombed visually, eight by radar. Reports ranged from "unobserved" and "fair" to a gratifyingly large number of "excellents"; the strategic importance of the strikes was, of course, negligible.[15] Perhaps the record owed something to luck since July weather was not ideal for visual attacks: a crewman reported cloud cover on one mission as "20/10–10/10 above and 10/10 below."[16] But by any standards known to the AAF, the 509th Group was ready by the end of July for its real mission.

The timing was perfect. In an official report drawn up in group headquarters soon after V-J Day, it is stated that early in June, Tibbets "was informed [that] one atomic bomb would be available for use against the enemy on 6 August 1945. The limiting factor was production." Tibbets himself has been quoted as saying that in April a meteorologist in Washington had predicted favorable weather over the target during "a three day stretch and he gave August 6 as the date."[17] Such a long-range forecast, of course, could have little validity; both the availability of the bomb and the decision to use it were determined by events subsequent to early June, as has been made evident in well-known published statements.

Mr. Stimson's testimony is most valuable here. Since 1941 he had been "directly responsible to the President for the entire [atomic bomb] undertaking"; under Stimson was Groves who (after 1942) was in charge of the developmental program and apparently had some ill-defined concern with the employment of the bomb. According to Stimson, there was never any question in Roosevelt's mind but that the bomb would be used when ready and this attitude was adopted by Mr. Truman when he acceded to the presidency in April 1945 and first learned the details of the project.[18] By that time the military preparations for the possible use of the bomb against Japan were already well advanced, as the previous pages have shown; the estimate by informed scientists that the first model would be ready by midsummer

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made it necessary to fit the bomb into current plans for the early defeat of Japan, plans that were given an added urgency by the surrender of Germany on 8 May and by the Big Three conference (TERMINAL) scheduled for Potsdam in July. Stimson established in May a so-called "Interim Committee" of eminent civilians to advise the President on atomic matters and on 1 June they recommended that: 1) the bomb be used against Japan as soon as possible; 2) it be used against a "dual" (military-civilian) target; and 3) the attack be made without specific warning as to the nature of the weapon.*[19] Later a group of scientists (the Committee on Social and Political Implications) involved in the project advised Stimson that the bomb not be used until after a demonstration of its powers had been made "before the eyes of all the United Nations on the desert or a barren island," and their report was seconded by a petition to the President signed by sixty-four scientists.[20] To the scientific panel advising the Interim Committee (A. H. Compton, Enrico Fermi, E. O. Lawrence, and J. R. Oppenheimer) this suggestion did not seem feasible and they could "see no acceptable alternative to direct military use."[21] This, it must be realized, was before the first test bomb had been exploded and no matter how certain they may have been of eventual success, the possibility of a dud made an advance notice a bad psychological risk. The view of the Interim Committee and its scientific panel coincided with Stimson's and the President's.

Already Arnold, in conference with Groves and others, had selected certain targets such as that described by the committee—"a military installation or war plant surrounded by or adjacent to houses and other buildings most susceptible to damage." For best psychological and experimental results, it was thought that the target city should be one relatively untouched; this ruled out the half-dozen largest cities. Arnold named Kyoto, largest unbombed city, Hiroshima, next largest, Niigata, and Kokura; later he ordered LeMay to reserve the cities for the 509th Bombardment Group. Kyoto, at the insistence of Stimson but against the judgment of Arnold, was stricken from the list because of its significance to the Japanese as a national shrine of religion and culture; Nagasaki was added, apparently by LeMay's staff, though the last was not considered an ideal target topographically.[22]

* The Interim Committee consisted of James F. Byrnes, Ralph A. Bard, William L. Clayton, Vannevar Bush, Karl T. Compton, James B. Conant, George L. Harrison. The recommendations listed above were originally adopted unanimously, but Bard later changed his opinion in respect to the last point.

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The four designated cities became the objects of intensive study by intelligence officers in Washington and the Marianas.

Those officials who were responsible for advising the new President before and during the Potsdam conference were not entirely of one mind in respect to the primary military and political problem in the Pacific—how best to end the Japanese war. The military leaders obviously could base no firm plans on the atomic bomb, a weapon as yet untried even experimentally; one of the Joint Chiefs, Admiral Leahy, has been refreshingly candid in confessing his extreme skepticism that the "professor's dream" would come true.[23] He has quoted Roosevelt as hoping that Japan might be conquered by air and sea power alone, a view to which Leahy himself subscribed, as did others in the Navy and AAF, including LeMay, who flew in from Guam to present the case for strategic bombardment before the JCS on 19 June.[24] Nevertheless, the strategy adopted by the Joint Chiefs and accepted by President Truman in late June called for an invasion of Kyushu in November, with a concentrated effort to end the war sooner by an intensification of the air assault and the blockade and by persuading the Russians to enter the war.[25] Because the invasion was to prove unnecessary and the Russian aid perhaps superfluous at the time and certainly embarrassing to U.S. policies later on, the advocates of that strategy have since come in for much criticism. Part of this criticism has stemmed from the bid for Russian aid, although that was probably an extraneous issue in June 1945, since Stalin had promised both at Tehran and Yalta to fight Japan after Germany's surrender and since regardless of American requests the Russians were almost certain to have entered the war because of their traditional interests in the Far East. In all fairness it must be realized that the decision on this strategy, like all adopted by the JCS, was a unanimous one and that it was supported by the experiences of the German war, by intelligence reports (remarkably correct) concerning the intact status of the Japanese Army, by the fresh memory of the fanatical resistance of enemy troops on Iwo Jima and Okinawa, and indirectly by American military tradition.[26] However, this strategy was opposed by Acting Secretary of State Joseph C. Grew.

Since V-E Day, Grew had believed that, in the face of the heavy air assault, the Japanese government could be persuaded to surrender by a declaration that our war aims did not envisage destruction of the Japanese nation or the Emperor's office.[27] This opinion was shared by

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Stimson and Secretary of the Navy James Forrestal; it was Stimson's draft of 2 July that was accepted by the President as the basis for such a declaration. "It was designed," Stimson said later, "to promise destruction if Japan resisted, and hope, if she surrendered." The warning, if not immediately heeded, should be followed by "sanctions"; stepping up the current air and sea war would provide such sanctions and so also, if it worked, would the atomic bomb, of whose power Stimson seems to have had no doubt.[28]

These were the policies that President Truman took to Potsdam in mid-July. There the CCS agreed on the intensification of the present means of war and on the Kyushu invasion for 15 November, and the Russians promised to declare war on Japan in August.[29] On 26 July the Potsdam Declaration calling for Japan's surrender was released over the signatures of Truman, Churchill, and Chiang Kai-shek. The statement, which made no reference to the Emperor, ended with the warning that "the only alternative for Japan is prompt and utter destruction."[30] There was no mention of the atomic bomb though by the time the ultimatum was issued it was known that the new weapon would immediately be available.

On 16 July, at Alamogordo in New Mexico, the first atomic bomb was exploded. The experiment was highly successful: the bomb was as powerful as any had dared hope and it was a practical weapon, described by one of its designers as a "bomb which could be delivered in battle and not some monstrosity which could only be set up over two or three acres of ground."[31] When reports of the test came to Potsdam, Stimson conferred with the President and with Marshall and Arnold concerning the employment of the bomb—the timing, the target, and the probable effects. The ultimate decision would lie with the President, but Arnold urged that Spaatz, as the field commander responsible for delivering the weapon, be given as much latitude as possible in the choice of the particular target—among those already designated—and the exact timing of the mission. This authority, necessary in view of weather and other tactical considerations, was granted and, after an exchange of communications between Potsdam and Washington, was included in a letter of instructions issued to Spaatz at the latter city on 25 July.[32] Churchill already knew of the plan to use the bomb, and on the 24th, Stalin was told of the new weapon; he expressed a polite but not profound interest.[33]

On 28 July Premier Suzuki told the Japanese press that his govern-

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HIROSHIMA: LAST-MINUTE INSTRUCTIONS

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THE WHITE HOUSE
WASHINGTON

January 12, 1953

My dear Professor Cate:

Your letter of December 6, 1952 has just now been delivered to me.

When the message came to Potsdam that a successful atomic explosion had taken place in New Mexico, there was much excitement and conversation about the effect on the war then in progress with Japan.

The next day I told the Prime Minister of Great Britain and Generalissimo Stalin that the explosion had been a success. The British Prime Minister understood and appreciated what I'd told him. Premier Stalin smiled and thanked me for reporting the explosion to him, but I'm sure he did not understand its significance.

I called a meeting of the Secretary of State, Mr. Byrnes, the Secretary of War, Mr. Stimson, Admiral Leahy, General Marshall, General Eisenhower, Admiral King and some others, to discuss what should be done with this awful weapon.

I asked General Marshall what it would cost in lives to land on the Tokio plain and other places in Japan. It was his opinion that such an invasion would cost at a minimum one quarter of a million casualties, and might cost as much as a million, on the American side alone, with an equal number of the enemy. The other military and naval men present agreed.

I asked Secretary Stimson which cities in Japan were devoted exclusively to war production. He promptly named Hiroshima and Nagasaki, among others.

We sent an ultimatum to Japan. It was rejected.

I ordered atomic bombs dropped on the two cities named on the way back from Potsdam, when we were in the middle of the Atlantic Ocean.

In your letter, you raise the fact that the directive

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to General Spaatz to prepare for delivering the bomb is dated July twenty-fifth. It was, of course, necessary to set the military wheels in motion, as these orders did, but the final decision was in my hands, and was not made until we were returning from Potsdam.

Dropping the bombs ended the war, saved lives, and gave the free nations a chance to face the facts.

When it looked as if Japan would quit, Russia hurried into the fray less than a week before the surrender, so as to be in at the settlement. No military contribution was made by the Russians toward victory over Japan. Prisoners were surrendered and Manchuria occupied by the Soviets, as was Korea, north of the 38th parallel.

Sincerely yours,

Harry S. Truman

Professor James L. Cate,
Department of History,
The University of Chicago,
1126 East 59th Street,
Chicago 37,
Illinois.

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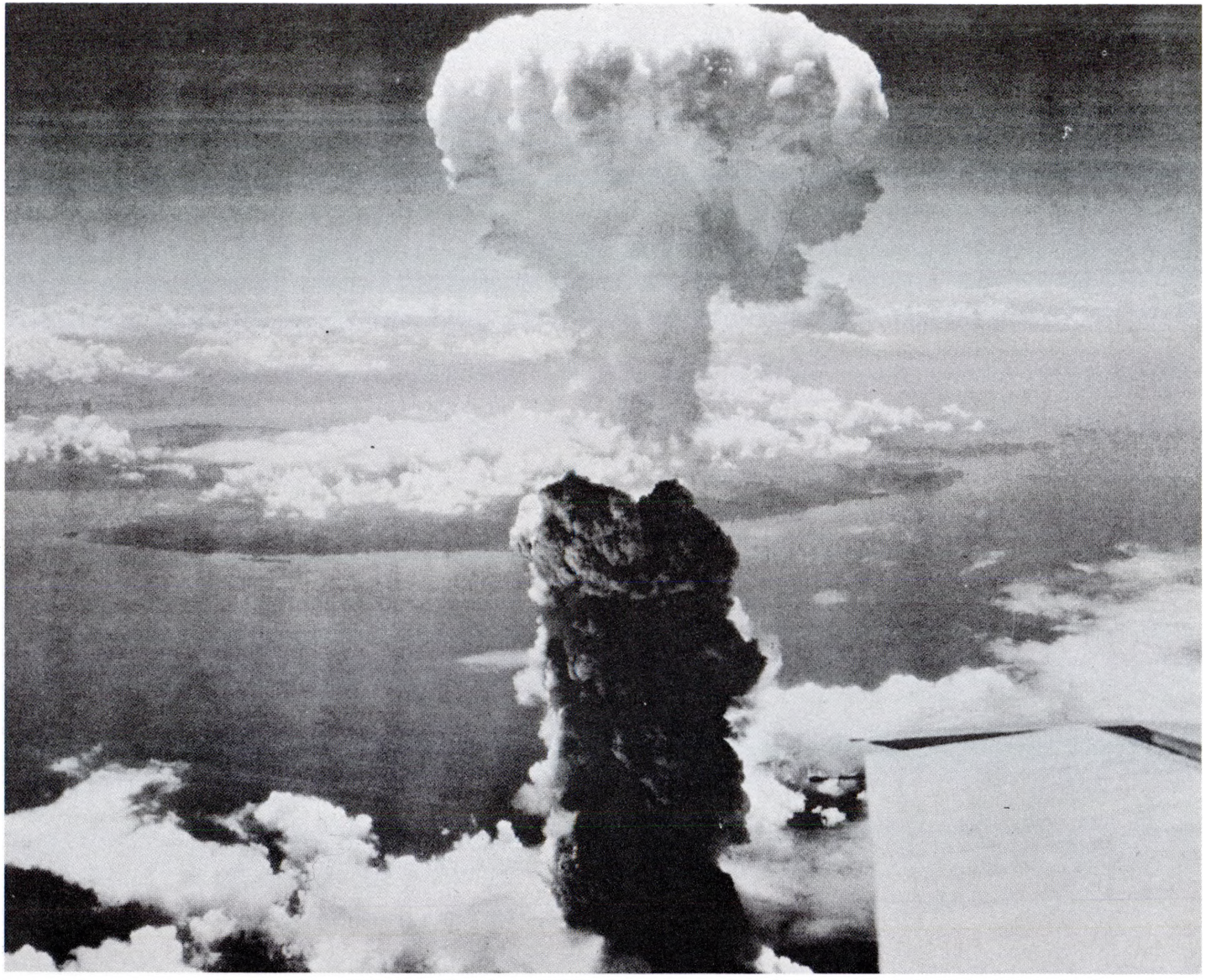

NAGASAKI: THE ATOMIC CLOUD

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ment would ignore the ultimatum issued at Potsdam.[34] This was interpreted by the Allies as a rejection. The next move was up to Harry Truman.

Hiroshima and Nagasaki

Soon after the first atom bomb was dropped it was rumored that the attack had been long delayed for international political reasons; conversely, and on "an authority which seems unimpeachable," it was surmised that the decision to use the new weapon reversed an earlier conviction of the President; and it has further been assumed that the bomb was employed with undue haste in order to end the war before Russia could launch its offensive against Japan.[35] The first theory is palpably false, and the second runs counter to the considered statements of those most intimately concerned. As to the last supposition, it does not accord well with the accepted policy of encouraging the Russians to enter the war against Japan, but it does receive indirect support from later statements of some of President Truman's advisers, who have professed entertaining at Potsdam little enthusiasm for the long-sought Soviet aid. Especially pertinent is Secretary of State James F. Byrnes' comment: "I would have been satisfied had the Russians determined not to enter the war. Notwithstanding Japan's persistent refusal to surrender unconditionally, I believed the atomic bomb would be successful and would force the Japanese to surrender on our terms."[36] In any event, the timing of the Hiroshima attack was dictated by tactical considerations—the availability of the bomb and weather conditions—and the final decision to use the new weapon was not made until after the Potsdam conference had adjourned.

For that grave decision, perhaps as difficult to make as any in all history, President Truman has courageously assumed full responsibility, saying: "The final decision had to be made by the President, and was made after a complete survey of the whole situation had been made. . . . The Japanese were given fair warning, and were offered the terms which they finally accepted, well in advance of the dropping of the bomb."[37] This explanation agrees closely with that of Stimson and, indeed, with the whole logic of the Potsdam ultimatum, but what appears at first reading to be contradictory evidence is afforded by the military directive authorizing the use of the atomic bomb.

That directive was issued to Spaatz, under circumstances described above, after an exchange of views between Stimson, Marshall, and

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Arnold at Potsdam, and Groves, Spaatz, and General Thomas T. Handy at Washington.* Signed by Handy as Acting Chief of Staff, and with the approval of Stimson and Marshall, the directive contained an unqualified order for the 509th Composite Group to "deliver its first special bomb as soon as weather would permit visual bombing after about 3 August." The document is dated 25 July, one day before the Potsdam Declaration and two days before Suzuki's rejection thereof on the 28th, Tokyo time. There is no reference to the ultimatum and no instruction as to procedures to be followed should the Japanese offer to surrender before 3 August. Under such circumstances, of course, responsible authorities might have countermanded the order by a radio message to Guam, but without further elaboration the directive to Spaatz could be interpreted to mean that the decision to use the atomic bomb had been made before, and without real regard for, the ultimatum issued at Potsdam.

The apparent discrepancy in evidence seemed to the present authors important enough to warrant a request for information from President Truman, and he has courteously responded to the questions raised.† The directive was given to Spaatz on 25 July, the President said, because "it was necessary to set the military wheels in motion, as these orders did, but the final decision was in my hands, and was not made until we were returning from Potsdam." And again, in the same context: "I ordered atomic bombs dropped on the two cities named on the way back from Potsdam, when we were in the middle of the Atlantic Ocean." The President sailed from Plymouth on the cruiser *Augusta* on 2 August; Spaatz' directive authorized an attack as early as the 3d, so the final decision would seem to have been made on one of those days. In the meantime, Spaatz had reached Guam on 29 July and final preparations for the attack had been completed rapidly.

According to the testimony of Groves and of Capt. William S. Parsons, USN, of the Los Alamos staff, the fissionable materials for the bomb were rushed out to Tinian as soon after the 16 July test as possible. Anticipating a successful test, Groves had already sent out the scientists needed to complete the assembly job at Tinian, and the active materials used in the Hiroshima bomb "probably had not been three weeks out of Oak Ridge . . . or Hanford."[38] Part of the fission-

* This document, previously published in *Life*, 16 Aug. 1948, p. 104, is reproduced in the present volume, facing p. 696.

† See the reproduction of his letter of 12 January 1953, facing p. 712.

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able material was shipped on the cruiser *Indianapolis* which left San Francisco a few hours after the test at Alamogordo and arrived at Tinian on 26 July; the loss of the ship to an enemy submarine off Leyte on the 29th has caused some speculation as to the course of the war had it been hit on the run-in rather than on the return. The rest of the stuff was hurried out by air transport and according to Groves the bomb "could have been ready" by 31 July.[39] On that date his deputy for the operation, Brig. Gen. Thomas F. Farrell, arrived at Tinian; the scientists and technicians were on station. By 1 August the 509th Group was ready to go; the crew selected to deliver the first bomb had made a dry run with a dummy bomb.[40] Spaatz' directive had set 3 August as the earliest day for the attack, and thereafter, as so often in the past, it was a question of waiting for a break in the weather: with only two bombs available, the drop would have to be made visually. LeMay, as Spaatz' chief of staff, would decide when the weather was suitable.[41]

The field orders—No. 13 for the 509th Group—were signed "by command of Lt. Gen. Twining, Twentieth Air Force" on 2 August; most of the tactical details had been prepared earlier.[42] The primary target was Hiroshima, accounted as Japan's eighth largest city though its population had shrunk through successive mass evacuations from 365,000 in 1943 to 245,000. Located on the underside of Honshu, with a harbor opening onto the Inland Sea, it had been an important military port of embarkation, though the mining campaign had in recent months dried up its traffic. Hiroshima housed the headquarters of the Second Army and of the Chucogu regional army with their numerous installations. The city's industries, greatly developed during the war but still of less importance than those of the great metropolitan centers, were for the most part geared directly to the war effort. The city lay in the delta of the Ota River, partly on six slender islands that stuck out like fingers on a deformed hand, partly in the palm of the hand. The industrial areas were outlying, the airport and some docks out on the last joint of the fingers; but the main commercial-residential districts were compact, thickly built up, and flat, with only one small hill. But for restrictions imposed by Washington, Hiroshima would have been hit long before; now as the most important of the proscribed cities it was a natural choice for the first atomic attack. An added incentive was the fact that Hiroshima alone of the four target cities had no POW camp nearby. The secondary target was Kokura, the tertiary Nagasaki.[43]

Seven B-29's, their group insignia and their names painted over but

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with the special "Victory" numbers showing, were designated for the mission. One was a spare that was to stand by at Iwo Jima where there were facilities for unloading and reloading the bomb in case of an abort. Three were weather planes, to be dispatched in advance of the attack, one to each target. The main force consisted of three B-29's: Colonel Tibbets' *Enola Gay* with the bomb aboard and two observation planes—Maj. Charles W. Sweeney's *The Great Artiste* and Capt. George W. Marquardt's No. 91—loaded with cameras and scientific instruments, and both carrying military and civilian observers in addition to their crews. The Twentieth Air Force, with other missions scheduled, would provide air-sea rescue service, but no plane except those on the mission was to approach within fifty miles of the target from four hours before to six hours after the strike, even for rescue purposes. Thereafter two F-13's were to perform photographic reconnaissance.[44]

According to the 509th Group historian, who was not in the know, the early days of August were marked by "much off-the-record scurrying about, secret meetings, and conferences behind closed doors."[45] Briefing for the crews selected was conducted in two sessions. On 4 August they were informed of the power of the bomb and its probable effects and were given the necessary details on the target and on operational procedures. Every man had known that the group's mission was to drop a special kind of a bomb, but the information that it would have a force equal to 20,000 tons of TNT seems to have been for almost all a complete surprise: even yet the exact nature of the bomb was not divulged. On the 5th the weather forecasts looked good; at midnight the crews were given last-minute details on weather and on air-sea rescue, and after a preflight breakfast and religious services were ready to go. The weather planes left soon after.[46]

At 0245 on 6 August Tibbets lifted the *Enola Gay* off the runway and was followed at two-minute intervals by the two observation planes. The trip out was uneventful, with a rendezvous at Iwo Jima where the slow climb to bombing altitude began. Tibbets was to select the target on the basis of reports from the weather planes, but was to bring the bomb back if all three cities were hidden by cloud. At 0815 he received the report from Hiroshima: "2/10 lower and middle, and 2/10 at 15,000 feet." This sealed the city's doom. Captain Parsons had gone along as "bomb commander and weaponeer"; he and his assistant, Lt. Morris R. Jeppson, had performed an assembly opera-

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tion after take-off and at 0730 made "it a final bomb," checking for a last time ten minutes before reaching the target. The initial point was reached at 0911, and as the *Enola Gay* swung into her short run-in, the bombardier (Maj. Thomas W. Ferebee), navigator (Capt. Theodore J. Van Kirk), and radar operator (Sgt. Joe A. Stiborik) took over. At 0915 (0815 Hiroshima time) Ferebee toggled the bomb out; the altitude was then 31,600 feet, the ground speed 328 m.p.h. Ferebee gave the controls back to Tibbets who executed a violent turn of 150 degrees and nosed down to gain speed.[47]

To increase the radius of its blast, the bomb was timed to explode at an altitude well above the target. The exact height was not mentioned in the mission report, but subsequent published statements have indicated that it was in the neighborhood of 2,000 feet.[48] When the explosion occurred, some fifty seconds after the release, the *Enola Gay* and the two observation planes were fifteen "slant" miles away, but the crews felt two distinct shocks. The awesome sight that unfolded before the eyes of Tibbets' crew (he, Ferebee, and the co-pilot, Capt. Robert A. Lewis, had forgotten to put on their polaroid goggles) was that later made familiar by numerous descriptions and photographs: the initial burst and "ball of fire"; the cloud mass; the rapidly ascending column which eventually mushroomed and continued its climb to 50,000 feet. Crewmen later reported that the smoke was visible from a distance of 390 miles.[49]

Immediately after the explosion Tibbets signaled to Tinian "mission successful." The return flight was uneventful. In the whole round trip no hostile plane was sighted; a score of very inaccurate bursts of flak constituted the enemy's only reaction to the war's most sensational attack. The *Enola Gay* touched down at 1458, the two other B-29's within less than forty minutes. Spaatz met Tibbets as he climbed down from his plane and presented him with the Distinguished Service Cross and the others of the crew with appropriate medals; one may hazard the guess that any decoration ceremony must have been an anticlimax after what the men had seen. Within five hours after the strike F-13's were over Hiroshima; they could report vast destruction, but fire, smoke, and dust were still so bad that no accurate estimates could be made.[50]

News of the mission was flashed to President Truman, then on board the *Augusta* on his way back from Potsdam. His public announcement of the event, drafted at Potsdam, was released in Wash-

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ington sixteen hours after the bomb fell (it then being 6 August Washington time); in it the President again warned the Japanese people, saying that if their leaders did not surrender they might "expect a rain of ruin from the air, the like of which has never been seen on this earth."[51] This message, relayed by radio to Japan, gave the government there its first real knowledge of the nature of the attack but brought no offer to surrender. Japanese Army officials tried to play down the significance of what had happened at Hiroshima: they were able to prevent the press from mentioning "atom bomb"; the official communiqué merely announced the dropping by parachute of bombs of a new sort which had caused "considerable damage" and which "should not be made light of." The reference to more than one bomb and to the parachutes suggests that some officials had been confused by the dropping of instruments used to measure the intensity of the blast. In spite of heavy censorship, many Japanese learned of the bomb through short-wave radio broadcasts from U.S. bases and through propaganda leaflets.[52] On Tinian, most persons got their first news of the atom bomb strike from the President's message—and this included many of the 509th's personnel. The group, after undergoing ridicule for weeks, now became famous overnight, receiving so much publicity that Spaatz began to worry about the morale of other B-29 units who carried nothing more spectacular than conventional bombs.[53]

There had been on 1 August enough fissionable material available for only two bombs, though "production was going up on a very sharp curve."[54] The intention was to use the two at close interval if the first did not suffice, and apparently there was some thought of running the second mission on 11 August.[55] While the world waited for a reply from Suzuki, the Twentieth Air Force kept hammering at Japan, dispatching on 7 August a 131-plane mission against Tokokawa, a large daylight incendiary against Yawata on the 8th, and on the following night a mining mission and two bomb strikes. On the 8th also the 509th sent out six planes to drop "pumpkin bombs" on various targets.[56] When bad weather was predicted for the Japanese main islands on 11 August, strike day for the atom bomb was advanced to the 9th.

Operational plans were patterned closely after those which had been so successful on 6 August; the fact that a new and more efficient bomb was to be used made no difference to the carriers, however im-

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portant it may have been to the scientists. Again there were to be three planes in the striking force, one armed and two for observation, and a spare at Iwo Jima, but only two weather planes were to be dispatched since only two possible targets were named. Niigata was ruled out as too distant. First choice was given to Kokura, a city near the northern tip of Kyushu, seat of a vast Army arsenal within which the aiming point was located. Nagasaki, on the west coast of Kyushu, was the secondary target. Its fine harbor had declined in importance in recent years but its industry had grown, centering chiefly in four great Mitsubishi plants that were responsible for 96 per cent of production in Nagasaki by firms employing more than fifty workers. Nagasaki had been hit on five occasions between 10 August 1944 and 1 August 1945: twice by B-29's (including a phenomenally effective chance strike by a single plane) and three times by Seventh Air Force bombers from Okinawa—these last after the city had been put on a restricted status. Nevertheless, Nagasaki remained virtually intact and had grown somewhat careless because of its relative immunity. Its topography, broken by hills and valleys, and its irregular layout were recognized as unfavorable to the purpose at hand.[57]

The second mission went off much less smoothly than the first. The weather planes got away at 0230 on 9 August, followed at 0349 by the strike force. This time the bomb was carried by Major Sweeney and his crew in a B-29 called *Bock's Car;* their regular plane, *The Great Artiste,* which they had flown as one of the observation planes on the Hiroshima mission, again served in the same capacity on the 9th, but now under command of Capt. Frederick C. Bock.* The outward course was plotted west of Iwo Jima to avoid a storm that was building up, but the planes, proceeding separately, ran into nasty weather anyhow.[58]

At a little after 0900 the weather planes reported visual conditions

* Through a curious error, caused perhaps by the removal of the names from the strike planes, the official communiqué stated that *The Great Artiste* carried the bomb on 9 August, and that mistake has been perpetuated in most published accounts, even those written by eyewitnesses. In 1946 discussion of a plan to retire *The Great Artiste* as a museum piece disclosed the error. The evidence of the serial numbers in the mission report is irrefutable and has been confirmed to the author by Captain Bock, who explained that he had exchanged B-29's with Sweeney for that mission. Apparently the change was to avoid the necessity of transferring the scientific instruments. At any rate, it was *Bock's Car, sans* Bock, that carried the bomb. (See msg., Wright-Patterson AFB to Hq. USAF, 19 May 1946; 509th Composite Group, Operations Order No. 39, 8 Aug. 1945; 509th Composite Group, Final Mission Report No. 16, 9 Aug. 1945; and interview with Frederick C. Bock by J. L. Cate, 23 Nov. 1952.)

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at both targets. Sweeney's plane reached the rendezvous point—Yakujima off the south coast of Kyushu—at 0909, one minute ahead of schedule, and was joined three minutes later by Bock's instrument plane. Bock spotted the other observation plane, piloted by Maj. James I. Hopkins, but lost contact; Sweeney never saw Hopkins' plane and after circling for three-quarters of an hour he and Bock headed for Kokura without it. There the weather had closed in meanwhile and Sweeney's bombardier, Capt. Kermit K. Beahan, made three runs without getting a glimpse of the target. With gas running low (600 gallons were trapped in the bomb-bay tank) and a few enemy fighters rising to investigate, Sweeney consulted with Beahan and Comdr. Frederick L. Ashworth (USN), the bomb commander and weaponeer. They decided to try the secondary target, make one run, and drop the bomb—visually if possible or by radar if not; this last decision, which ran counter to Sweeney's orders, was made on Ashworth's responsibility because of the shortage of fuel. Over Nagasaki they found 8/10 cloud and the run-in was "90 per cent by radar," but at the last second Beahan found a hole in the cloud and let go. It was then 1058 Nagasaki time.[59]

Sweeney banked his plane sharply and pushed down from his 28,900-foot altitude. A minute later, when the explosion came, "it was as if the B-29 were being beaten by a telephone pole"; five separate shocks were felt, and in general the turbulence seemed worse than that experienced over Hiroshima, though the reports of what followed read much like the earlier ones. Sweeney's signal to Tinian was apparently not received. He headed for Okinawa, frequently used by B-29's in distress after Kyushu strikes, and brought the *Bock's Car* down safely in an emergency landing at 1400 with only a few gallons of fuel left. Bock came in soon after and together then went on to Tinian; all three planes were home by 2339.[60]

On the basis of photographs taken by F-13's on 11 August, it was possible to estimate with considerable accuracy the area ruined in each city by the atomic bombs: for example, the estimate made on 19 August gave for Hiroshima 4.1 square miles destroyed and .6 square miles badly damaged, as against a later on-the-spot computation of 4.7 square miles destroyed.[61] Because of the novelty of the weapon and its significance both for the war just ending and for the future, it was highly desirable that a systematic study of the over-all results of the attacks be made to supplement these early appraisals—and the early

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surrender of Japan made that possible. Immediately after the cessation of hostilities, General Farrell took a party to Japan to investigate the effects of the two atom bombs and the Japanese efforts at relief and recovery.[62] Other commissions, U.S. and Allied, followed to make more thorough studies. The most valuable reports are the several published by USSBS after a ten-week survey begun in October 1945[63] and that of the British Mission to Japan done at about the same time.[64] The investigators, who enjoyed the full cooperation of Japanese officials, had access to such records as survived the holocausts, and these sources of information were used to supplement the data obtained in the physical surveys. Some eyewitness accounts have been preserved,[65] and some secondhand accounts, factual or sensational, have been written.[66] Few great disasters have been reported in greater detail, but the events were so catastrophic and so wholly unexpected that any account of what happened on the ground is of necessity less complete than that of the attack itself.

At Hiroshima the bomb exploded at 0815 local time, some forty-five minutes after a previous air-raid alert—probably caused by Tibbets' weather planes—had ended. Most factory workers were on the job, as were school children helping clear firebreaks, but others were on their way to work. Some citizens had ascribed their long respite to some unknown favorable condition which might continue; others had long expected the sort of attack that had gutted other cities but had become hardened to the sight of small formations of "Mr. B"; their indifference, the recent "all-clear" signal, and the neglected condition of air-raid precautions help explain the terrible slaughter that day, though it would have been great under any circumstances.[67]

The attack was directed against a densely built-up area, a mixture of residential, commercial, military, and small industrial buildings. The aiming point was just south of an army headquarters, at the northern tip of the long island containing Hiroshima's airport. Planners, calculating on a 7,500-foot radius of destruction, thought that a bomb exploding here would wreck all important parts of the city except the dock areas. In this they were eminently correct. "Ground zero," the point immediately below the explosion point, was near a bridge at the end of the island and quite close to the aiming point. The blast of the bomb collapsed many buildings and set off innumerable fires, to which were added many secondary blazes, all fanned by a violent "fire wind" caused by the intense heat. Neither artificial firebreaks nor the

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seven river channels could check the conflagration; the area destroyed—4.7 square miles in a compact pattern centering on zero, and extending 6,000 to 8,000 feet outward—included most of the densely built-up sections of the city. Practically every building in the city received some damage, which varied with distance and structure from complete annihilation to broken windows or displaced roof tiles. Buildings of typical Japanese construction were consumed, leaving comparatively little rubble; of about thirty substantial buildings of reinforced concrete or masonry, all suffered severe blast damage of some sort and all but two were ruined internally by fire. Of 50,160 buildings in the city proper, 40,653 (81.1 per cent) were destroyed, 8,396 (16.7 per cent) were severely damaged, 1,111 (2.2 per cent) slightly damaged. The larger factories were for the most part located on the outskirts of the city and suffered less than the "downtown" and residential districts, but did not escape unhurt.[68]

Casualties were of a magnitude comparable to the physical damage. The exact totals will never be known, but they were figured by the Japanese authorities at 71,379 dead and missing and 68,023 injured; of those injured 19,691 were seriously hurt. USSBS, unwilling to accept these precise figures, figured the dead at between 70,000 and 80,000 and the injured at about the same. This would give a slightly lower figure for killed and missing than in the Tokyo fire raid of 9/10 March but a larger number of wounded;* the rate of casualties per square mile was much greater at Hiroshima. Deaths were caused, as in an ordinary air raid, by blast effect, falling debris, flash burns, and burns from the fires kindled; to these common dangers was added at Hiroshima the effect of radiation, which because of its novelty excited much concern at the time of the surveys and later. Estimates of the proportion of deaths which were ascribable to this cause ranged from 7 to 20 per cent of the total, but it was generally agreed that many more persons would have died from radiation had they not suffered a more immediate death from blast or fire. Radiation effects were received directly from the gamma rays released at the time of the blast; because of the great height of the explosion there was little of the sort of protracted radioactivity experienced at Alamogordo.[69]

The high rate of deaths derived in part from the temporary collapse of all rescue and relief agencies. Of 298 doctors in Hiroshima, 270 were killed, and 1,645 nurses out of 1,780; 42 of 45 hospitals were

* See above, p. 617.

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destroyed or rendered useless. Immediately after the blast there was a general flight from the flaming city by panic-stricken survivors; next day many returned to search for relatives or possessions. The commander of the Second Army took charge of the city and organized relief activities, using military personnel (6,769 soldiers out of 24,158 were killed or missing), buildings, and supplies as well as civilian help from the local and neighboring prefectures. Providing food and shelter for the 171,000 persons made homeless was a major problem, simplified somewhat by the mild weather. Only basic public utilities could be restored, and rehabilitation of the city had hardly begun when the Allies moved in during September. The industrial recovery of Hiroshima promised to be more rapid than its general recovery, since the large factories—with most workers already in place—suffered less than the heart of the city.[70]

The city of Nagasaki was irregular in pattern, conforming to the shape of the harbor and the surrounding terrain. Eastward lay the old city—comprising the main administrative, commercial, and residential districts—stretching from the Dejima Wharf area across the flats and northeastward up the Nakajima River valley. The west side of the harbor was given over largely to heavy industry. North of the harbor, up the valley of the Urakami River, were located more industries (including two giant Mitsubishi plants), residential districts, and some institutional buildings. The Urakami area was less congested than the old town and contained a larger share of modern-type structures. The hills rose steeply between and beyond the converging river valleys and were cut by gorges and ravines; the whole harbor basin gave an impression from the air of a natural amphitheater, but the built-up districts were pretty well separated. This irregular spread and the large water area (harbor, rivers, canals) gave Nagasaki protection against a wide-ranging conflagration. Air-raid shelters were unusually good by Japanese standards, consisting for the most part of tunnels dug into the numerous hills and cliffs. With ample warning, these might have saved a very considerable proportion of the city's populace.[71]

The Japanese Army's high command, as has been shown above, allowed only an equivocal reference to the use of a new-type of bomb at Hiroshima; the admonition that citizens should wear clothing covering the whole body and should take shelter at the appearance of even the smallest flight of U.S. planes carried little weight without further explanation. Nagasaki workers had lost many man-hours in

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alerts, caused in most instances by attacks on other Kyushu cities; there had been a false alarm on 8 August. On the morning of the 9th an alert sounded at 0745, followed by the raid alarm at 0750. These signals were for two high-flying northbound aircraft, presumably Sweeney's weather planes, and when they had passed the all-clear was sounded at 0830. Again at 1053 two planes were sighted at great altitude, this time coming in from the east. The raid signal was given without a previous alert. Very few people made for the shelters on this second alarm, and most citizens were caught at work, at home, or on the streets when the bomb went off at 1101 with a dazzling white flash.[72]

The aiming point named in the field orders was the Mitsubishi Steel and Arms Works, located on the east bank of the Urakami River in the northern arm of the city. The 509th Group's mission planning summary, a source which is usually very reliable, puts the aiming point in the commercial district east of the harbor, a site which seems more in keeping with the potentialities of the bomb. Sweeney's report rated bombing results as "good to fair" (as opposed to "excellent" on the Hiroshima mission), but if the Mitsubishi plant was really the target, the bombing was better than that, considering the conditions under which the run was made. Ground zero was later identified as a point about 900 feet east of the Urakami and 8,500 feet from where the river joined Nagasaki harbor. This spot was only 500 yards north of the edge of the sprawling arms plant, .75 miles from its center, and .80 miles south of the center of another Mitsubishi complex.[73]

At Hiroshima it had been the swiftly spreading fire that had most impressed the observers; at Nagasaki, where there was no fire wind, the blast effects seem by comparison worse than those on the 6th, a result partly of the nature of the second bomb, partly of the bowl-shaped region into which it fell. The area of greatest destruction was oval shaped, approximately 2.3 miles along its north-south axis and 1.9 miles from east to west. Within this space, all buildings were destroyed or rendered useless by blast, fire, or a combination of the two, though a plot of the ruined area is much more irregular than one for Hiroshima because of the different degree of built-upness. Beyond this oval, severe damage extended over the whole Urakami section of the city and southward into areas on both sides the harbor, though the pattern of destruction was again irregular, in some cases almost as capriciously so as the path of a tornado. Here, as in Hiroshima, cases

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of minor damage were reported as far as 16,000 feet from zero. The total area destroyed was calculated as 1.45 square miles out of a total of 3.84. This was much less than at Hiroshima and only slightly more than half of the average for normal incendiary raids, which ran to about 2.87 square miles, counting multiple attacks. By comparison with Hiroshima, however, the damage to industry was much heavier. Excluding the dockyard area (outside the radius of the bomb's effect), 68.3 per cent of the industrial productive area was destroyed. The fact that the factories affected were no longer operating at top capacity does not detract from the effectiveness of the bomb.[74]

At Nagasaki, as at Hiroshima, it was impossible to determine exactly the cost in human life, but certainly the losses were considerably lighter in the second attack; except for the stupidity of the Army they might have been even less, for workers excavating in the tunnel shelters, when not exposed to direct blast in the openings, were uninjured and with proper warning more persons might have got underground. The official Japanese figures of 23,753 killed, 1,927 missing, and 23,345 injured are too low, since they included only verified cases. USSBS estimated as minimum figures for the same categories 35,000, 5,000, and 60,000 persons. There was no general panic as at Hiroshima. Casualties among doctors seem to have been fewer than at Hiroshima, but again the destruction of hospitals (including that of Nagasaki University, one of the best in Japan, and the Nagasaki Medical College), hampered medical services. Rail service on Nagasaki's one line was not interrupted—the crew of an inbound train dangerously close to the bombed area made some of the earliest rescues—and aid came soon from other cities.[75]

Both at Hiroshima and at Nagasaki the effects of the atom bomb on the morale of survivors was profound. This is attested by countless incidental remarks as well as by the efforts of USSBS interrogators to obtain a scientific sampling. From the point of view of those responsible for dropping the bombs, the most important reaction was that of defeatism, especially significant in the two towns whose previous immunity had encouraged a more optimistic view of the war than was prevalent in Japan. To what extent the attacks influenced a similar defeatism in Japan at large, and to what extent that attitude influenced the government—these are the measures of the political success of the atom bomb. Such questions must be examined in the context of Japanese efforts to surrender.

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The Japanese Surrender

When the atom bomb exploded over Nagasaki on the morning of 9 August, the inner council of the Japanese government was in session discussing surrender terms; Emperor Hirohito and Premier Kantaro Suzuki had already decided to accept the terms offered at Potsdam on 26 July, and by 14 August their decision was put into action. The surrender followed so rapidly the atomic attacks and Russia's entrance into the war that those events might seem to have been decisive factors in Japan's defeat. In reality, some Japanese leaders had long recognized the inevitability of an Allied victory and since early spring had been searching for a method of ending the conflict before the nation was destroyed. The main outlines of the peace movement can be traced with fair assurance, and the comments thereon by responsible officials, both in the postwar interrogations and in the most revealing account subsequently published, that of Toshikazu Kase of the Japanese Foreign Office, show how thoroughly the will to resist had been crushed by conventional weapons.[76] A brief recital of the events that led to surrender is therefore a prerequisite to any appraisal of the role of air power in the war; the story is essentially a confirmation of the judgment of Grew, Stimson, and others that the Japanese might be brought to capitulate without an invasion if strong military pressures were accompanied by a clarification of Allied intentions concerning the nation and the Emperor.

The Japanese government never approached the monolithic structure commonly associated with the totalitarian state: the nation, it has been said, was ruled "by a concensus among the oligarchy of ruling factions at the top."[77] The Emperor, cloaked in divinity and guardian of the Japanese way of life, called after his title the "Tenno system," was limited in power by the constitution and by practice. Much of his contact with the government was through the Lord Privy Seal (Marquis Koichi Kido); the Emperor and the government at large were advised by the Jushin, elder statesmen who had no responsibility but considerable influence. The government was dominated by the military. Each service named its own cabinet minister—always a general or admiral—and both they and the army and navy chiefs of staff had direct access to the Emperor. Yet neither the ministers nor their chiefs of staff were wholly free to develop their own policies, their opinions being strongly curbed by the radical militarism of al-

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most all army officers and of many junior navy officers: the tradition of "rule by assassination" was a powerful deterrent against any open move for peace. The bureaucracy and the Zaibatsu, the great industrial combines, were powerful forces in politics but were divided. The Diet was of little consequence, the general public of even less, though by 1944 national war policies were influenced by a belated concern over public opinion and fear of a Communist revolt.[78]

Some Japanese leaders had opposed the war from its beginning, but the spectacular success of the early campaigns prevented any open criticism of Tojo's militaristic regime. The Allied victories that began at Midway and continued without a major setback in the several Pacific theaters served, however, to weaken Tojo's position and immediately after the loss of Saipan his cabinet fell (18 July 1944). The threat of B-29 attacks from the Marianas was appreciated well enough to lend weight to the arguments of those leaders who had come to believe, on the basis of realistic studies of national resources, that Japan had little chance of winning the war. They began, consequently, a clandestine campaign of indoctrination among members of the Jushin and the government, seeking to initiate a peace movement through indirect pressures of the sort encouraged by the nation's political structure. Critics of Tojo had as yet developed no clear-cut formula and the new government headed by Kuniaki Koiso was formed without any mandate to seek peace; on the contrary, Koiso bent every effort to prosecute the war more vigorously. As a part of that policy, he established the Supreme War Direction Council, a small body composed of the Premier, the Foreign Minister, the Army and Navy ministers, and the two chiefs of staff. Since the council was responsible for "the harmonization of the combined strategy for politics and the war," it was in a position to effect a closer liaison between civilian and military officials, and it was to be, more truly than the cabinet itself, the vital organ in the drive for peace.[79]

Adm. Mitsumasa Yonai, Vice Premier and Navy Minister, was particularly active in continuing studies relative to Japan's military potential and in seeing that the Jushin were more accurately informed as to her strategic reversals, and as Koiso's efforts to stem the Allied advance proved futile, the peace party gained in strength. Deliberations were held in strictest secrecy, partly because of fear of the army, partly because of uncertainty concerning the reaction of the public, still grossly ill informed about the progress of the war. The

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B-29 attacks from the Marianas and defeats in the Philippines and at Iwo Jima could not be hidden from the people, however, and they lent urgency to current endeavors to bring the war to an end even on terms that would have been unacceptable at its very beginning. By February 1945 the Emperor had been warned by some of the Jushin of the seriousness of the situation and by March there was some thought in the cabinet of attempting to negotiate a general peace by first approaching Chiang Kai-shek. The invasion of Okinawa on 1 April was followed within a week by the dismissal of Koiso and the formation of a new cabinet under Adm. Kantaro Suzuki, a former navy chief of staff who more recently had held important government offices.[80]

Both Suzuki and Kido later testified that the former received what amounted to an imperial injunction to end the war as quickly as possible. On other evidence Suzuki seems originally to have been rather more optimistic about Japan's situation than the facts warranted, and as part of his policy he made a considerable show of spurring the war effort, but the long interval between the Emperor's vague directive and actual capitulation was a measure of Suzuki's fear of the extreme militarists rather than of any lively hope of ultimate victory. As his cabinet was being formed, on 5 April the Soviets renounced their neutrality pact with Japan, and it was recognized that this might be a prelude to an open break. A month later, on 8 May, Germany surrendered, leaving Japan to face alone the powers she had been unable to check even while their main resources were thrown against the European Axis. Germany's defeat seems to have made a profound impression in Japan, and President Truman's announcement thereof left little doubt as to his intention of following Roosevelt's aim of complete victory over Japan. Further studies of the war situation made at Suzuki's request fully convinced him that defeat was inevitable. Within the Supreme War Direction Council, where final decisions were made by unanimous consent rather than majority vote, opinion was sharply divided: Suzuki, Shigenori Togo (Foreign Minister), and Yonai were for immediate peace; Gen. Korei Anami (Army Minister) and the two chiefs of staff, Adm. Soemu Toyoda and Gen. Yoshijiro Umezu, wanted to fight on until some victory might provide a better position from which to negotiate. Nevertheless, initial steps were taken in May to sound out the Russians on the possibility of interceding with the United States; this included unofficial

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conversations with Ambassador Yakov A. Malik in Tokyo and a more formal approach through Naotake Sato, Japanese ambassador in Moscow. At Anami's request, the war council met with the Emperor on 8 June; no one had the courage to advocate peace and the proposal of the military "to prosecute the war fully" apparently went unchallenged. On the 20th, however, the Emperor summoned the council again and directed its members to devise means for terminating the war as well as for defending the homeland. Suzuki then explained the efforts being made to secure Russia's services as a go-between, and he seems to have felt that with imperial support thus insured, the rest of the government could be won over.[81]

When Malik inopportunely became "ill" in Tokyo, Sato was directed to push his efforts with the Kremlin—specifically, to secure permission for Prince Fumimaro Konoye to come to Moscow to negotiate for better Russo-Japanese relations and for Soviet aid in arranging peace between Japan and her enemies. The Russians temporized; when the Emperor on 10 July expressed disappointment over the delay, Sato attempted to approach Molotov directly but on the 13th was informed that no answer to the Japanese proposals could be given until after the return of Stalin and Molotov from Potsdam. After that Suzuki had little hope of aid from Moscow, but he awaited the outcome of the conference before making a more direct approach toward the Americans and British. At Potsdam, on 28 July, Stalin informed Truman of Sato's earlier efforts and of the more recent request that he receive Konoye. Stalin reported that in both approaches the Japanese had declared that they would not surrender unconditionally, which would have been a normal approach in diplomacy, but after the war Konoye said that he had been secretly instructed by the Emperor to accept any terms whatever. At any rate, the Potsdam Declaration of 26 July again recorded the refusal of the Allies to accept a compromise peace.[82]

In Tokyo reactions to the declaration followed familiar lines. Suzuki, Togo, and Yonai, having long realized that the terms of peace would be stern, favored immediate acceptance; Anami, Umezu, and Toyoda objected. Much of the debate turned on the threat against war criminals, the fate of the Emperor, and the future of Japan's "polity," the Tenno system. Some officials found the terms of the ultimatum less severe than they had anticipated; the military in publishing the text actually deleted certain items as being too attractive

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to the Japanese people. The cabinet, with imperial consent, decided to make no immediate reply, and it was Suzuki's unfortunate phrasing of this decision in a press release that was interpreted by U.S. leaders as a flat rejection.[83]

When the true nature of the bomb dropped at Hiroshima became known in Tokyo on 7 August, Suzuki and Togo again advised the Emperor to accept the Potsdam formula—to which he had voiced no objections—and again the military resisted. On the 8th (Moscow time) the U.S.S.R. declared war on Japan. The Russians pointed to this act as a meticulous fulfillment of earlier promises, this being three months to the day after Germany's surrender. Their recent statements had suggested a somewhat later date: Stalin had told Harry Hopkins in May that the Russian armies would be "properly deployed" by 8 August and would attack during that month; at Potsdam the President's earliest impression was that the break would come on 15 August, but the Russian military set it at "late in August." It is reasonable to suppose, though there is no direct evidence, that the success of the atomic bomb at Hiroshima speeded up the Soviets' timetable. In any event, when the news reached the Foreign Office at Tokyo at about 0400 on 9 August, it came as a surprise, however much it may have been feared.[84]

In an early morning conference Suzuki and the Emperor decided on immediate peace. Later in the morning the small council met but ended in a deadlock, as did a cabinet meeting convened that afternoon. Suzuki then asked the Emperor to meet with the inner cabinet; the session began at 2330, and after several hours of discussion the Premier suggested that the Emperor's views be solicited and followed. Hirohito said he had decided "that this war should be stopped." This was about 0300 on the 10th. The full cabinet was reconvened and decided unanimously that the Potsdam terms should be accepted save in so far as they threatened the prerogatives of the Emperor. During the morning session on the 9th the second atom bomb had exploded over Nagasaki. There was also a curious rumor, derived from interrogation of a captured B-29 pilot, that an atomic attack on Tokyo was scheduled for 12 August. Spaatz had asked for permission to stage such a mission when another bomb was available, but the pilot could not have known this. The actual bombs and the rumor may have made the surrender easier, but they did not cause it.[85]

Within a few hours the decision of the cabinet had been transmitted

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in messages to the United States via the Swiss government and to the British and Russians via Stockholm. The American reply came first by broadcast from San Francisco at 0400 on 12 August and more formally through the Swiss on the following morning. The delay had been caused by the concern of some in Washington that acceding to the Japanese qualification might be construed as retreating from the Potsdam demands, and though there was no intention of destroying the imperial office, the American reply was indirect in its reassurance.[86] To the recalcitrant militarists, this message was unsatisfactory; there was a great deal of confused debate and some threat of a military *Putsch*. Finally, on the morning of the 14th, the Emperor on his own initiative called the cabinet together and reiterated his opinion that the war should be ended. Finding nothing objectionable in the U.S. proposals, he asked his ministers to prepare for his signature an imperial rescript accepting the Potsdam Declaration. This the cabinet did in an afternoon session and the document was sent out that night. The U.S. reply demanded an immediate cessation of hostilities and directed the Japanese government to send emissaries to General of the Army Douglas MacArthur, Supreme Commander for the Allied Powers, to arrange for the formal surrender.[87] At noon on the 15th the Japanese first learned of the surrender through a transcribed broadcast of an address by the Emperor. For all but the official class the news came as a complete surprise, yet in spite of earlier fears there was no general revolt. While it was impossible to secure immediately a perfect compliance in the cease-fire order and while there was some disorder on the part of army radicals, no incidents really threatened to complicate the occupation proceedings.[88]

For the Twentieth Air Force, as for other Army and Navy air organizations, the interval between the declaration of surrender terms at Potsdam and their unreserved acceptance at Tokyo had been one of great activity and considerable uncertainty. The JCS, while setting a November D-day for the Kyushu invasion, had directed MacArthur and Nimitz to make plans for procedures to be followed in case of an earlier surrender, and on 1 August Spaatz met with MacArthur and Kenney at Manila to consult on the part to be played by USASTAF in either eventuality. Spaatz was not convinced that the landing would be necessary. After an initial inspection he had been most favorably impressed by the efficiency of the Twentieth Air Force and on 2 August declared his conviction "that unless Japan desires to commit

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national suicide, they should quit immediately."[89] After the atomic attack on Hiroshima, there was hope in the Marianas as elsewhere that the capitulation would occur within a matter of hours. When no surrender message came, Washington ordered Spaatz to continue planned operations until otherwise informed.[90] In regular day and night missions, 170 B-29's were airborne on 7 August, 420 on the 8th, 109 on the 9th, 114 on the 10th.[91] The 509th Composite Group ran two missions with "pumpkin" bombs on the 8th and next day carried out the Nagasaki attack.[92] Meanwhile, the propaganda campaign had been intensified. B-29's had dropped leaflets informing the Japanese of the terms of the Potsdam Declaration, of the nature of the atom bomb attacks, and of Russia's entrance into the war. Postwar surveys show that this method was much more successful than radio broadcasts in reaching the people and was quite effective in convincing them of the hopelessness of the struggle.[93]

When news of the Japanese note of 10 August was broadcast, FEAF planes continued their strikes against the home islands,* but because he feared that area bombing might complicate the negotiations, Spaatz limited USASTAF operations to precision missions. This involved canceling a scheduled strike because of bad weather, and the cancellation unfortunately was interpreted by the American press as a cease-fire order. Believing that a resumption of B-29 attacks would in turn be played up as an indication that negotiations had failed, the President on 11 August ordered that USASTAF stop all strategic operations, even to the extent of recalling planes which might be in the air.[94] FEAF held up operations on the 12th, but with negotiations still hanging fire on the 14th, both Kenney and Spaatz were ordered to resume bombing.

Arnold wanted as big a finale as possible, hoping that USASTAF could hit the Tokyo area in a 1,000-plane mission: the Twentieth Air Force had put up 853 B-29's and 79 fighters on 1 August, and Arnold thought the number could be rounded out by calling on Doolittle's Eighth Air Force. Spaatz still wanted to drop the third atom bomb on Tokyo but thought that battered city a poor target for conventional bombing; instead, he proposed to divide his forces between seven targets. Arnold was apologetic about the unfortunate mixup on the 11th and, accepting Spaatz' amendment, assured him that his orders had been "coordinated with my superiors all the way to the

* See above p. 699.

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top." The long teleconference ended with a fervid "Thank God" from Spaatz.[95]

Kenney had the Okinawa strips tied up with other operations so that Doolittle was unable to send out his VHB's. From the Marianas, 449 B-29's went out for a daylight strike on the 14th, and that night, with top officers standing by at Washington and Guam for a last-minute cancellation, 372 more were airborne. Seven planes dispatched on special bombing missions by the 509th Group brought the number of B-29's to 828, and with 186 fighter escorts dispatched, USASTAF passed Arnold's goal with a total of 1,014 aircraft.[96] There were no losses, and before the last B-29 returned President Truman announced the unconditional surrender of Japan. For the B-29's there were no more combat flights—as there were for FEAF planes—but there was still work to be done before the trip home began.

With the cessation of hostilities, flying time per crew and per plane decreased sharply—by about half for the B-29's and rather less for the fighters, whose patrols from Iwo Jima continued. The total number of hours flown by B-29's in September was less than that for the first half of August, but the decrease was almost entirely accounted for by the lack of combat missions. Weather and photo-reconnaissance missions continued regularly, and the 10,743 hours of B-29 training almost equaled the time spent in the peak month of July. About one-third of the B-29 effort was devoted to transport, as the bombers supplemented regular cargo planes in the preparations for the formal surrender and for the initial occupation of Japan.[97] B-29's carried equipment to Khabarovsk in Siberia in a belated effort to set up a weather station as permitted by the Soviets at Potsdam.[98] In a public relations project called STINKO, USASTAF planes secured photographs of bomb damage in Japan, supported ground teams collecting pictures and news stories in Japan, and flew the prints to Washington.[99] USASTAF planes moved and supplied General Farrell's atomic investigation party and its own forward headquarters, set up near Tokyo as USASTAF (ADVON), and maintained a courier service between Guam and Atsugi Airfield. During September the B-29's were used to fly thousands of ground personnel on sightseeing expeditions over Japan.[100]

Immediately after hostilities ceased Spaatz directed that the Twentieth Air Force provide a "display of air power . . . continuous and increasing between 19 August and V-J Day." Operational plans

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called for almost daily flights over the Tokyo plain by B-29's drawn in rotation from the five wings and by Iwo-based fighters, all planes to carry ammunition but no bombs. Those missions, like the surrender ceremony, were postponed by weather and other complications. The first exhibition, a low-level flight of ninety-eight B-29's, was staged on 30 August in conjunction with the landing at Atsugi airfield of the 11th Airborne Division and MacArthur. A similar force was over again on the next day, and on 2 September, as the surrender ceremonies were conducted on board the *Missouri*, a force of 462 B-29's circled in the air. A further show scheduled for the 4th was canceled, but when XXIV Corps occupied Korea on 29 and 30 September, 140 B-29's were on hand. In addition to the 799 B-29 sorties, the "show of force" project involved 117 sorties by VLR fighters from Iwo Jima. Although the display was less spectacular than had been planned, it was more than enough for the purpose: there was no resistance from the thoroughly beaten enemy.[101]

Meanwhile, other B-29's had been regularly over Japan, China, and Korea in a much more important mission, an errand of mercy that contrasted sharply with their recent bombing attacks. This mission was supplying POW and internee camps until the prisoners, Allied as well as U.S., could be evacuated. As originally planned, the task was to be divided between FEAF and USASTAF, but the range and capacity of the B-29's fitted them ideally for the job; consequently, in a directive of 17 August, Spaatz laid the whole responsibility on the Twentieth Air Force. The total number of camps was currently estimated at some 300, of which about half had been identified by intelligence officers. The list was revised on the basis of more precise information furnished by the Japanese government, and in all 154 camps were supplied by the B-29's in August and September.[102]

Engineer officers at Guam developed methods of packaging supplies in "blocks" and of installing cargo platforms in the bombers. The supplies were furnished by Western Pacific Base Command in the Marianas, and the parachutes by FEAF—12,000 were flown over from Manila by B-29's in the first installment. Supplies included food, clothing, and 110-pound medical kits with instructions included. The operations began with a drop to the Weihsien Camp near Peiping on 27 August. Within five days most of the camps had received their first delivery of clothing, medicine, and a three-day stock of food consisting of soups, fruit juices, extracts, vitamins, and other emer-

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gency items. In a second visit, seven-day supplies of regular rations were dropped, and thereafter such camps as had not been reached by ground parties were regularly supplied by ten-day increments until finally evacuated. So rapid was the work of the rescue parties that a few camps got by on the initial delivery and only about half required the ten-day packages. In addition to regular supplies, other items were furnished on demand—beer, ice cream (with apologies that "soda fountains were not available in the theater"), plasma, and other medical supplies.[103]

Between 27 August and 20 September, 1,066 planes were airborne on POW missions, of which 900 were accounted effective sorties. They dropped 4,470 tons of supplies, serving an estimated 63,500 prisoners. This effort was not without its cost. Eight aircraft were lost, with seventy-seven casualties. When the stock of parachutes was exhausted, some supplies were dropped in free fall, and instances were noted where prisoners, running out to get the supplies before they were carried off by Japanese, were killed by the falling packs.[104] In one instance, when a B-29 from the 73d Wing was supplying a camp in northern Korea, it was attacked by Soviet fighters and damaged so badly it had to crash-land. No lives were lost, but this incident—described by the Russians as a "mistake"—interfered briefly with the program in that area.[105] But in general the job was done with dispatch and efficiency, and the enthusiastic reception accorded the low-flying B-29's by the prisoners was an indication of the success of this final mission.

Appraisal

Allied plans at the outbreak of war had given first priority to the defeat of Germany. It had been assumed that operations in the Pacific would be necessarily limited to little more than a holding effort until victory was won in Europe. Instead, by the time of the German surrender in May 1945, U.S. and Allied forces had liberated Burma, reoccupied the Philippines, and brought the Japanese homeland under intense air assault from bases seized and developed in the central Pacific. And then, after the lapse of hardly more than three months, came the final surrender—well in advance of the scheduled invasion of Kyushu and the better part of a year ahead of the date set for a climactic landing on Honshu itself.

The fact that these planned invasions had proved to be unnecessary

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lent peculiar interest to postwar studies of the Japanese defeat. It was an American victory primarily, and the American people, from colonial days forward, had done most of their fighting by land. They thus had become accustomed to the idea that wars are won by armies. Although the geographical location of the United States had freed it of the necessity to maintain a large standing Army, and the Navy, as "the first line of defense," had long enjoyed a favored position in the development of national military policy, it was assumed that in time of war the Army carried the main and killing punch. Naval forces could deny an enemy army the opportunity to invade the United States, they could make it possible for the American Army to carry the war overseas to the enemy, and they could help the Army win the war by blockading enemy ports, but in all save strictly defensive operations the Navy's role had been viewed as basically a supporting one. This habit of thought had affected also the American attitude toward the proper use of air power. Responding to some of the more obvious lessons taught by the blitzkrieg tactics of the German army early in the war, by the Battle of Britain, and by the Japanese attack at Pearl Harbor, the United States had quickly armed itself with the world's greatest air force, but the primary mission of that force had been support, direct or indirect, of the Army. Like a navy, an air force was obviously necessary to success in modern war: it could help in the defense of our own shores, it could cover the landing of our army on enemy shores, it could render powerful assistance to the advance of that army, and by strategic bombardment of the enemy homeland it could soften up the foe for the final attack. But all American war plans rested upon an assumption that the infantryman would still have to deliver the knockout blow. Yet, the Japanese surrender had come without a single American soldier having set foot in Japan, and with a Japanese home army of some 2,000,000 men still intact. In awarding credit for this victory, the extremely tough fighting that had fallen to the lot of the American ground soldier could not be ignored, but his task fundamentally had been to advance the bases from which air and naval forces operated. His role, in other words, had been a supporting one and the war had been won, despite the script, without his having to assume the lead. Something new had been added to America's experience with war—something that called for close study.

It was evident enough that the victory belonged primarily to air and sea power, but the proportion of the credit that should be as-

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signed each of the two presented a more difficult issue. Especially critical was the question of the AAF's contribution, for the Japanese surrender had come so quickly after the mounting of an effective offensive by the B-29's as to suggest confirmation even of the most optimistic predictions by the advocates of air power. And the implications of this possibility acquired still greater significance because the AAF offensive had reached its climax with the dropping of the first atomic bombs. Whatever might be the final conclusion as to the causes for Japan's surrender, it seemed indisputable that the war's end marked one of the revolutionary turning points in the history of warfare itself.

President Truman acted promptly to assure a careful study of the evidence. On 15 August 1945 he requested the United States Strategic Bombing Survey, an organization then nearing the conclusion of a comprehensive study of the bombardment of Germany, to undertake a comparably broad survey of the air war against Japan.[106] USSBS, as the survey was commonly known, had been established in November 1944 by the Secretary of War, acting on the initiative of the AAF and under a directive from President Roosevelt, for the purpose of conducting an impartial study of the strategic bombing of Germany in the hope that resulting conclusions might be no less useful to bombing operations against Japan than to the settlement of postwar problems of national defense.* Headed by Mr. Franklin D'Olier, the president of the Prudential Insurance Company, and a board of directors drawn from appropriate areas of specialization in civilian life,† the survey staff had enjoyed the assistance of military advisers from all of the services and operated with an authorized complement of 300 civilians, 350 officers, and 500 enlisted men. By the close of the summer of 1945 the staff had completed, or had near completion, some 200 specialized reports on which were based the general conclusions of the Over-all Report published at the end of September.[107] Its verdict that air power had been the decisive factor in the defeat of Germany did not meet with universal indorsement; at the same time, its repeated criticism of the conduct of certain phases of the air war against Germany freed the survey board of any suspicion that its report was an apology for the AAF. The survey's leadership was distinguished and its staff was experienced. If any organization promised an impartial

* See Vol. III, 789–92.

† Except for one man, all of the directors were at the time civilians.

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and informed analysis of air's contribution to the defeat of Japan, this was it.

The Japanese war presented, however, a somewhat different and much more complex problem than had the strategic bombardment of Germany. Teams of experts who surveyed the ruins of Japanese cities and factories, examined production records, conducted medical and psychological studies, or reviewed Japanese defensive measures were engaged in familiar tasks, for they had followed the Allied armies into Germany for just such work and had acquired valuable experience in the assessment of pertinent evidence. The survey staff enjoyed also the assistance of top-ranking experts in its study of the atomic attacks on Hiroshima and Nagasaki.[108] But a directive calling for "study of the effects of all types of air attack in the war against Japan"[109] carried USSBS into additional areas of investigation that promised to be particularly difficult and in which it had much less experience.* Tactical as well as strategic operations were to be considered, and operations by Navy planes as well as by those of the AAF. There could have been little point, of course, in considering the nonstrategic operations of the AAF apart from those of the Marine and Navy units with which AAF forces had been closely teamed so often. And it must be admitted that there would have been real difficulty in studying the effects of strategic bombardment as an isolated problem, for the B-29 offensive—to take but one example—had reached true effectiveness only after a blockade implemented chiefly by U.S. submarines had had a telling effect on Japan's capacity to prosecute the war.

To the Military Analysis Division of USSBS, which had been headed by Maj. Gen. Orvil A. Anderson and which continued to work under his leadership, there was now added a Naval Analysis Division under Rear Adm. R. A. Ofstie. In a further adjustment of staff to the requirements of the new study, the military complement of USSBS was drawn 60 per cent from the Army and 40 per cent from the Navy.[110] The contrasting interests and often conflicting views of the two divisions are well enough documented by the special studies sponsored by each.[111] A team made up chiefly of officers of the U.S. Marine Corps prepared a balanced and especially valuable account of

* Except for a mere handful of studies undertaken by the Military Analysis Division and by the Transportation Division, in Europe the survey had dealt exclusively with the effects of strategic bombardment.

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the Allied campaign against Rabaul.[112] The Naval Analysis Division also presented studies on operations against Wake Island, Truk, Wotje, Maloelap, Mille, and Jaluit and of mine-laying operations. More numerous, however, were its surveys of the effectiveness of ship bombardment, and the division's chief publication, a substantial and useful study called *The Campaigns of the Pacific War*, supported by two volumes of recorded interviews with Japanese officials, was distinctly oriented toward standard naval warfare, with an apology in the foreword suggesting that the opportunity to do the study had been too good to pass up.[113] Meanwhile, the Military Analysis Division directed its attention to studies of Allied air forces operating with U.S. forces, of Japanese air strength and weakness, of enemy air weapons and tactics, of the effect of air action on the logistical problems of the Japanese Army, of the employment of air forces in the southwest Pacific, of Air Transport Command operations, and of the operations of the several Army air forces employed in the war against Japan, with the Tenth and the Fourteenth Air Forces treated in a single study on CBI. In the preparation of these studies of the separate air forces the division depended heavily, as was acknowledged in the forewords, on key officers who had served during the war with the air force concerned and who were brought together again on temporary assignment. There is an obvious advantage for the historian in having men who have fought together undertake some common interpretation of their action, and the studies must have helped the survey staff to grasp the unique qualities of the war effort in different areas, but these reports offer of course ex parte rather than impartial evidence.

The most interesting of the studies made by the Military Analysis Division, and from the Navy's point of view undoubtedly the most provocative, was a review of the air campaigns of the Pacific war.[114] Reflecting the influence especially of General Anderson, the argument, put briefly, was that air power and particularly land-based air power had been the decisive factor in Japan's defeat and that this defeat had been assured as early as the spring of 1944. Lacking the technological resources for a sustained effort against a major power, even one deploying its main forces against another foe, Japan had gambled on a quick victory with only a limited number of well-trained pilots and little capacity to replace them. Encouraged by initial victories, Japanese leaders had overextended their perimeter

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and invited defeat in the Solomons and New Guinea. In the resulting struggle for that area, Allied aviation, predominantly land-based, had destroyed the first-line air strength of the Japanese Navy and then of the Japanese Army. By April 1944 the decisive campaigns of the war had been fought and won by the Fifth and Thirteenth Air Forces and Marine air units in the Solomons, with some assistance from Australian and New Zealand allies. Simultaneously, Allied air forces based in India had defeated the Japanese air forces over Burma. Thereafter, it remained only for the Allied air, sea, and land forces to exploit air's initial and decisive victory.

The survey's Summary Report, issued on 1 July 1946, disclaimed all purpose "to apportion credit" for the victory and, not surprisingly, indicated that the report spoke only for the civilian component of the staff.[115] It could have been assumed, of course, that in an organization so constituted the civilian heads carried full responsibility for conclusions stated, and there had been no occasion for such a stipulation evident in the earlier European report. But if the survey's directors had failed to bring their AAF and Navy subordinates to a common point of view, they succeeded in avoiding the pitfalls of partisanship themselves. Though directing attention chiefly to the air phase of the war, in keeping with their mission, they found "little point in attempting precisely to impute Japan's unconditional surrender to any one of the numerous causes which jointly and cumulatively were responsible for Japan's disaster."[116]

With a productive capacity approximately 10 per cent of the American, Japan had lacked the strength for a real contest with the United States. Hoping for an early victory, Japanese leaders had been persuaded by initial successes to undertake an ill-advised extension of their defensive perimeter. At Midway the balance of carrier strength in the Pacific had been restored by the American victory, and the enemy never recovered from the subsequent sacrifice of his first-line air strength in the Solomons and New Guinea. Although Japan's aircraft production thereafter was increased to a point in excess of the mounting rate of loss, the standard of training for combat pilots showed a continuing decline, the average flying experience of the Japanese pilot at the close of the war being just over 100 hours as against the 600-hour average for his American opponent. Japan's geographical position made the contest essentially a struggle for control of the seas, and the newly developed effectiveness of air weapons

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made that struggle basically a contest for mastery of the air over the seas. "Control of the air was essential to the success of every major military operation," but it had been the "coordinated teamplay of ground, sea and air forces, both ground-based and carrier-based, and their supporting services, backed up by the full effort of all phases of the home front that enabled us to secure control of the air, at first locally and then more generally, culminating in virtual freedom of the skies over the Japanese home islands themselves."[117]

Once that freedom of the skies over the home islands had been established, the doom of Japan was sealed. In the opinion of the survey, the eventual decision to surrender would have been made, certainly by the end of 1945 and probably before November, the month set for the initial invasion of the home islands, without the additional persuasion of the atom bomb, Russia's entry into the war, or amphibious invasion. One of the more interesting revelations in the report was a statement that representatives of the survey called from Europe to Washington for consultation in June 1945 had advised that an invasion of Japan would be unnecessary.[118] "Military defeats in the air, at sea and on the land, destruction of shipping by submarines and by air, and direct air attack with conventional as well as atomic bombs," all had contributed to the destruction of Japan's will and capacity to continue the war.[119]

Specific references to the survey's evaluation of individual parts of the American war effort will be reserved for the following summary. Here, and partly by way of introduction to that summary, it may be observed that the evidence assembled by the survey strongly suggests that the postwar debate over the relative credit belonging to air and sea forces has tended to obscure some of the more important, if obvious, facts about the war with Japan. Though heavily engaged with a much more powerful foe in Europe, the United States had managed to find the means to win a victory that was in no significant way dependent upon the aid of forces redeployed from European theaters. Only in the first-line strength of the U.S. Navy and in the B-29 did the victor employ the major weapons of his arsenal, and only at a relatively late date could the full power of either of these weapons be brought to bear. Meantime, the lesser forces available had seized, by often desperate fighting, the positions which made possible the devastating assault upon the inner defenses of the Empire that brought the Pacific war to its extraordinary climax. If any one factor, aside from

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the weakness of Japan herself, deserves principal emphasis, it is the high degree of effective joint action achieved among the American armed services.

At first glance this conclusion may seem to be at variance with the facts. In sharp contrast with the European war, the war with Japan was fought without the benefit of a united command, even among the American forces. Over most of the Pacific areas the Navy exercised command through the person of Admiral Nimitz, with Army air and other units subordinate to him. In the southwest Pacific, General MacArthur commanded, with Navy units in a subordinate position. China, India, and Burma constituted an entirely separate theater, with its own bewildering complexities of command. Personalities as well as service rivalries entered into the negotiations through which the several commanders reached agreement on necessary cooperation. At times only the superior authority of the Joint Chiefs of Staff, a body which itself depended upon debate and negotiation to reach a decision, could bring a settlement between conflicting strategies.

But the war with Japan had had its beginning in a major disaster to American armed forces, and for months after Pearl Harbor the enemy had moved irresistibly from one victory to another. Although successive disasters momentarily gave to American forces in the Pacific a first claim upon U.S. resources, the over-all strategy of the Allies continued to place the defeat of Germany ahead of that of Japan and the fighting by which the enemy's advance was stopped in New Guinea and the Solomons was of the most desperate sort. Against a foe who continued to fight with skill and fanaticism, and with the natural advantages of interior lines of communication, the road to Tokyo seemed a long and difficult one, even after the advantage of superior strength had passed to U.S. forces. Jealousy and bickering were often evident, but the closer one came to the fighting the more impressive was the underlying will to cooperate.

Perhaps the most representative, though by no means the strongest, of the Army's air forces in the Pacific was the Thirteenth Air Force. Tracing its origins to small and scattered units thrown into an improvised defense of the south Pacific islands early in 1942, the Thirteenth fought its way up from Henderson Field on Guadalcanal in intimate collaboration with air units of the U.S. Marine Corps to bases from which it took over, with the Marines, late in 1943 the primary responsibility for knocking out Rabaul. With that mission completed,

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in June 1944 it passed from Navy control to the Far East Air Forces, an organization dominated by the Fifth Air Force. While the Fifth spearheaded the drive into the Philippines, the Thirteenth shared with the Seventh Air Force the responsibility for neutralizing the Carolines in behalf of the Navy's central Pacific drive and ended the war in support of ground operations designed to clean up areas well behind the main battle front. At no time during the war did the Thirteenth Air Force seek publicity although its lot was to fight in partnership with some of the more highly publicized of American military organizations.

The Seventh Air Force, based on Hawaii, had taken, along with the Navy, the brunt of Japan's original attack. Serving thereafter as a force charged primarily with a defensive mission, the Seventh had flown search missions under Navy control until the launching of the central Pacific offensive in the latter part of 1943. It subsequently cooperated with the Thirteenth in neutralizing the Carolines. But not until the Philippines had been reoccupied did the Seventh win the autonomy that promised for it a full share in the final assault on Japan. When the war ended, it was taking position in Okinawa as a part of Kenney's expanded Far East Air Forces.

The Eleventh Air Force in Alaska and the Aleutians had grown out of hastily assembled units which, under Navy command, guarded the northwestern approach to the United States. The risk of a Japanese invasion by that approach had been discounted at an early date, and the Eleventh remained a small organization. Weather difficulties gave it a limited role to play, and after the Japanese withdrawal from Kiska in the summer of 1943, Army air units waited out the war's end with only occasional raids on the Kuril Islands.

At the far end of the semicircle suggested by the geographical location of the six Army air forces operating against Japan throughout the war, the Tenth and Fourteenth Air Forces, in India and China respectively, struggled against logistical difficulties greater than any besetting other air forces. Dependent upon supplies delivered across the Hump by air until late in the war, the Fourteenth wrote a brilliant record of tactical achievement but eventually suffered, through no fault of its own, the loss of its east China airfields to the Japanese Army. This loss denied the Fourteenth any substantial part in the climactic assault on the inner defenses of the Japanese Empire—a denial made all the more bitter because earlier plans had assumed that China-

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based planes might carry the main weight of the final attack on Japan. At the war's end the Tenth Air Force, which earlier had guarded the air route to China and then had teamed with RAF units to make possible the expulsion of the Japanese from Burma, was moving into China for collaboration with the Fourteenth against the now withdrawing Japanese forces. Had the war lasted another year China-based air forces might have found a significant role to play, but by the summer of 1945 it was already evident that bases in the Philippines, the Marianas, and newly won Okinawa would support the main attack on Japan.

In the Pacific campaigns which had won these commanding positions for U.S. forces, the Fifth Air Force had been the chief representative of the AAF. The numerical designation had been assigned early in 1942 to the remnants of Army air units escaping to Australia from the disasters in the Philippines and the Netherlands East Indies. Since the SWPA command of Gen. Douglas MacArthur became thereafter the major responsibility of the U.S. Army in the war against Japan, the Fifth Air Force naturally held first claim on AAF resources designated for the Pacific.* Brilliantly commanded after August 1942 by Gen. George C. Kenney, the Fifth found in MacArthur a theater commander whose sympathy was increasingly enlisted in the effort to exploit the full potentialities of the air weapon. With Kenney and

* The Army Air Forces Statistical Digest shows assignments of combat groups, not counting those assigned to the Twentieth Air Force, as follows:

Pacific Ocean Areas (Seventh and Thirteenth Air Forces)
December 1942—3⅝
December 1943—5
December 1944—7
August 1945—5

China-Burma-India (Tenth and Fourteenth Air Forces)
December 1942—4
December 1943—8¼
December 1944—17
August 1945—17

Alaska (Eleventh Air Force)
December 1942—2½
December 1943—1
December 1944—2
August 1945—2

Southwest Pacific Area (Fifth Air Force, with the Thirteenth after June 1944 and the Seventh after the spring of 1945)
December 1942—12⅝
December 1943—26⅔
December 1944—30
August 1945—30

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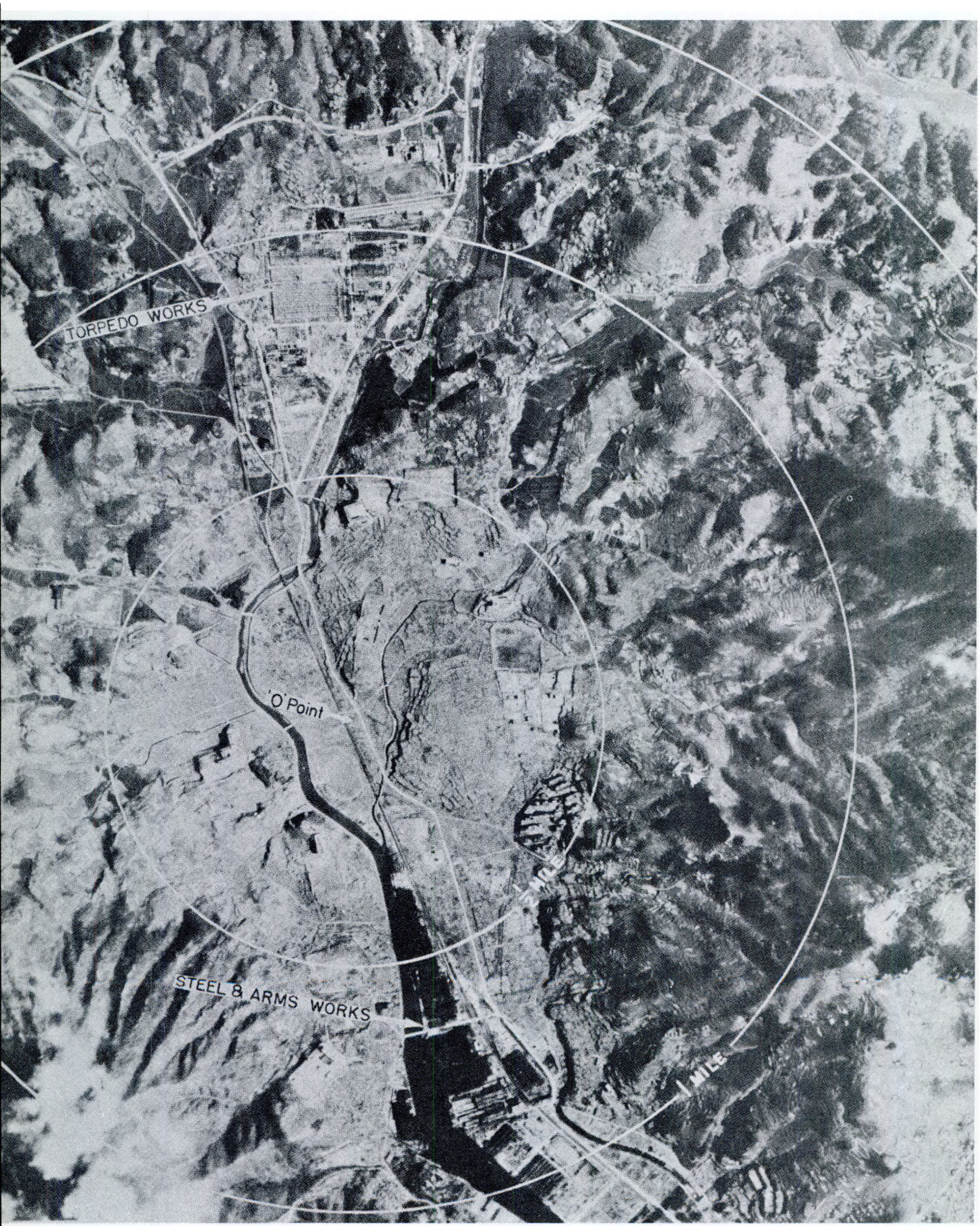

NAGASAKI: POST-STRIKE PHOTO

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HIROSHIMA

Left: Before Attack

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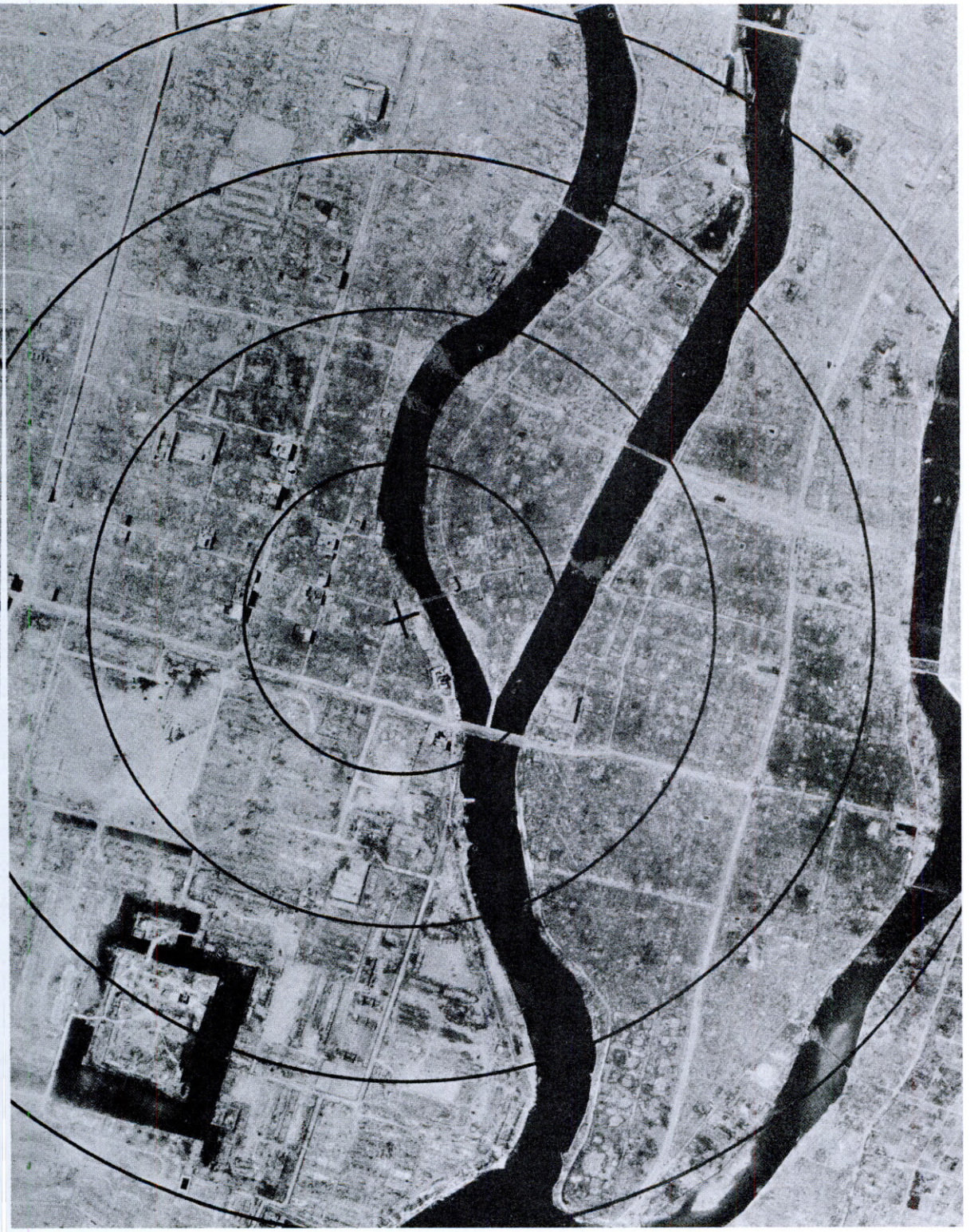

Right: After Attack

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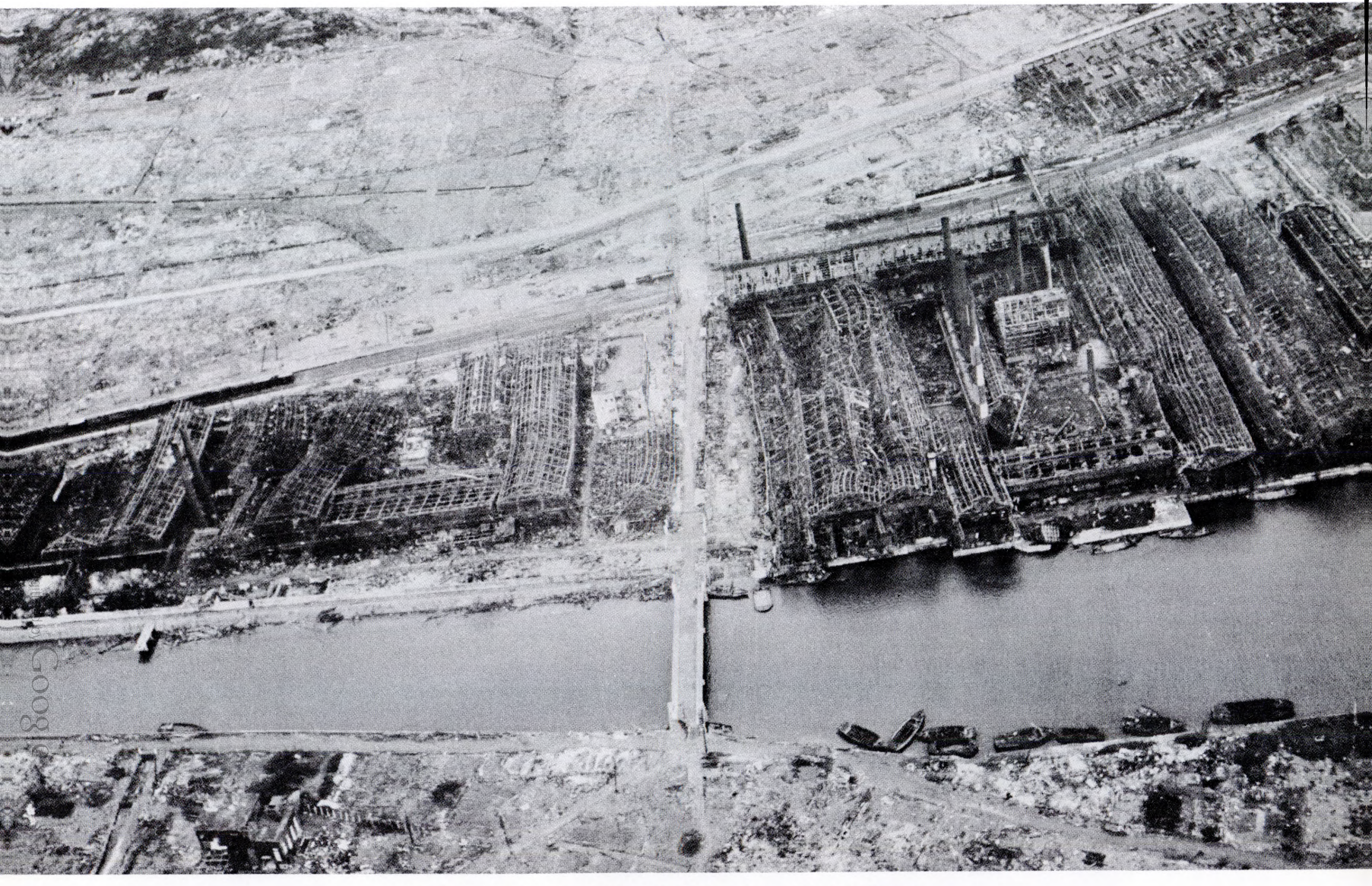

NAGASAKI: MITSUBISHI STEEL AND ARMS WORKS

his able lieutenant, Maj. Gen. Ennis G. Whitehead, left free to determine the organization and employment of AAF units within the requirements fixed by directed strategy, the Fifth operated with the advantage of more favorable command relations than was the lot of any other air force engaged in the war with Japan, except perhaps for the Twentieth. The record achieved lends strong support to the airman's argument that the airplane is most effectively employed when left to the control of those who fully understand both its potentialities and its limitations. If in the following discussion the Fifth Air Force seems to receive an undue share of attention, no slight is intended for organizations less fortunate in the resources at their command and the freedom with which they employed them.

The tactics developed in the SWPA advance along the coast of New Guinea and then into the Philippines were simple, effective, and unusually economical in terms of the casualties borne by the participating forces. In the face of an enemy who occupied island and coastal bases tied together by sea and air communications, the general plan was to advance by leaps never exceeding the reach of land-based aviation. In each stage of the advance the air force went ahead to beat down the enemy's air forces and to limit the enemy's capacity to reinforce his garrisons. Carrier-borne planes of the Seventh Fleet or of Nimitz' Pacific Fleet, on loan for the purpose of sweeping clean the battle area on the eve of amphibious assault, proved to be especially effective, and at times their assistance made possible leaps extending beyond the immediate reach of land-based planes. But the staying power of carrier units was unavoidably limited by the carrier's need for periodic replenishment and any opportunity to engage the enemy fleet became a competing obligation of overriding priority; when, as at Leyte, land-based planes could not immediately take over the protection of a newly won beachhead, there was trouble. Air supremacy, experience made clear, was not a thing to be established and then exploited, but something to be maintained by unrelenting effort, for an airfield subjected to the most devastating attack can be made usable again in a matter of hours and the planes destroyed upon its aprons can be replaced by units flown in from other bases. It is the capacity to return day after day to the same targets, to tear up again and again the same runways, and to keep an unbroken watch against the reinforcement of threatening enemy air bases that permits an air organization to perform its primary function by winning and keeping con-

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trol of the air. In the performance of this function under the conditions which governed during the war with Japan, the land-based plane proved itself pre-eminent over all other weapons.

Halsey's tactics in his advance from Guadalcanal up the island chain of the Solomons differed in no essential way from those employed by MacArthur in his early progress up the coast of New Guinea toward the enemy's citadel at Rabaul. The land-based planes of the Marine Corps and of the Thirteenth Air Force and the Royal New Zealand Air Force cleared the way, with the aid of timely blows by the carriers, for a final assault on Rabaul. Planners originally had assumed that Rabaul would have to be seized by amphibious forces, but the power already demonstrated by the air forces justified the decision to bypass the enemy's chief base in the southern Pacific, with the task of knocking it out assigned to the air forces. The Fifth Air Force took the lead and then turned the task over to the Thirteenth and its Marine Corps partners, while it moved northwest toward the Philippines. By the spring of 1944 not only had Rabaul been rendered innocuous, but Japan no longer possessed even a second-rate air force. The first-line strength of its naval air units had been sacrificed in the Solomons and on New Britain, and the first-line strength of its army air units had fallen a victim to the Fifth Air Force and its Australian allies at Wewak and elsewhere on New Guinea. One of the decisive victories of the war had been won. It was a victory primarily for land-based air power, and other victories which followed, among them the conclusive one, undoubtedly came easier because of it.

By the summer of 1944 the air forces—U.S. and Allied, Army, Marine, and Navy—had won air supremacy over their Japanese opponents and possessed, moreover, such superiority in terms of strength, equipment, and training as to guarantee continued control of the air. Nothing so clearly demonstrated this fact as did the enemy's resort to the suicidal tactics of *kamikaze* attacks. These tactics could be dangerous, especially to vulnerable naval units, but they had little effect on the freedom with which air units exploited their initial victory. Indeed, American forces, ground and naval, became so accustomed during the last months of the war to a relatively absolute supremacy in the air as to render our nation, in view of a parallel experience in Europe, vulnerable to dangerous assumptions as to the degree of air supremacy that normally can be expected.

To win a victory over the enemy air forces was but part of the mission which fell to AAF units in the Pacific. Isolation of the battle area,

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for which air forces shared responsibility with naval units, required efforts to deny the enemy an opportunity to reinforce his garrisons by sea as well as by air. During the early part of the war, when AAF bombers attacked shipping at high altitude, the record was one of repeated and dismal failure. But after Kenney had turned to the medium bomber and to tactics which sent it in at low altitude with increased firepower, the story changed. The battle of the Bismarck Sea in March 1943 gave a dramatic demonstration of air's capacity for interdiction of sea, as well as air, communications. If any further proof was needed of air's newly demonstrated power, it was offered by the enemy's increasing dependence upon luggers and other small boats for the movement of his forces along the coast by night. Special radar-equipped B-24's during the last year of the war cut further into the mobility enjoyed by the enemy. The U.S. Strategic Bombing Survey concluded that "air units which had anti-shipping attacks as their prime mission and employed the required specialized techniques, equipment and training achieved against ships the best results for the effort expended."[120] There is no intent to challenge the strategic achievement of U.S. submarines in destroying the main bulk of the enemy's merchant marine. The point simply is that AAF forces demonstrated repeatedly their capacity to deny the enemy an opportunity to reinforce his besieged garrisons. And in the process, of course, the AAF added to the cumulative losses sustained by the Japanese merchant marine.

In reconnaissance, reaching out over the vast distances of the Pacific, AAF units performed a valued service for all Allied forces. Convoys moved forward with their assault troops under an air cover that rarely permitted the enemy to get through with damaging attacks. Where necessary, beaches were softened by preassault bombardment, and at times direct aid was rendered to the assault forces in their fight on the ground. But between the Papuan campaign of 1942 and the landing on Luzon in 1945 the need for such assistance was limited; after the assault forces had gone ashore the principal responsibility of the AAF was to protect the troops and their supporting convoys from interference by enemy air—a job done with distinction. The wide diversity of tasks falling to the lot of the AAF permitted no such specialization as was possible with carrier and Marine units, but the support given ground forces in the Philippines brought few complaints.

It was the versatility of the AAF, rather than its accomplishments

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in any one department, which deserves principal emphasis in a review of its contribution to the defeat of Japan. Though charged primarily with tactical missions, the AAF could assume, as the Balikpapan raids and the knockout of Formosa suggest, the responsibility for a strategic mission. And though ultimately dependent upon sea transport for its own logistical support, the AAF won for itself a remarkable degree of self-sufficiency through the use of air transport. For almost four years air transport alone kept alive the war effort in China and maintained an air force, small though it was, as a token of the American purpose to back China. In Burma the disadvantages of jungle and primitive transportation facilities were overcome largely through a heavy dependence upon air transport. Of the seventeen combat groups assigned to CBI during the last year of the war no less than six were troop carrier units, and their function had never been interpreted in any narrow fashion. The cargo carried ranged all the way from the top brass to the Army mule, and when the occasion demanded it, a full Chinese division could be lifted over the Hump in a matter of hours. In SWPA seven of the thirty combat groups were troop carriers. At times they carried troops for airborne landings which speeded the advance toward Luzon, but more commonly they shuttled freight —ammunition, fuel, food, and bulldozers. And on the way back they took out the wounded and the sick. Nothing is taken from the credit belonging to other U.S. and Allied forces when it is argued that Japan's defeat could have been accomplished only at the expenditure of more time and more blood without the varied services rendered by the AAF.

The Twentieth Air Force was an apparent exception to the generalization made above that support of the Army was the primary mission of the AAF. Like its weapon, that force had been designed by men interested chiefly in strategic bombardment, and it had been given, according to one staff officer, "the implied task of bombing the b'Jesus out of Japan."[121] More formally, the JCS had directed the Twentieth "to achieve the earliest possible progressive dislocation of the Japanese military, industrial, and economic systems and to undermine the morale of the Japanese people to a point where their capacity and will to wage war" would be decisively weakened. Support for Pacific operations was specifically described as a secondary mission.[122] Nevertheless, in the final strategy adopted by the JCS in June 1945 in anticipation of the Potsdam conference, the B-29 attacks on the home is-

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lands were conceived as a preparation for invasion, not as a direct means of winning the war. Some air officers—including Arnold and LeMay—some USSBS officials, and some Navy officers thought that Japan could be defeated by air assault and blockade, but the JCS decision in favor of the Kyushu landing was unanimous.[123] The AAF had been rendered cautious by the resilience of Germany under bombing and perhaps was reluctant to oppose too strongly the Army leadership which had granted it in most respects a quasi-autonomy.

With that qualification as to its final role—analagous to that of USSTAF forces in Europe in respect to the OVERLORD invasion—the Twentieth Air Force from its activation was dedicated to strategic bombardment. The desire to use the B-29's as exclusively as possible against Inner Zone targets was largely responsible for the peculiar command system which kept operational control in Washington. This device did protect B-29 units in the field from excessive diversion to tactical missions, but in spite of an elaborate communications system and of the increasing latitude given to tactical commanders, operational control from Washington proved clumsy. The establishment of USASTAF late in the war promised to smooth out some of the command problems of the growing VHB forces, but it was a solution that depended more on the experience and prestige of General Spaatz than on any inherent logic.

During the war against Japan, Allied planes expended 656,400 tons of bombs, including 160,800 tons dropped on the home islands. Of this latter figure, Navy planes were responsible for 6,800 tons, AAF planes other than B-29's for 7,000 tons, and the B-29's for 147,000 tons.[124]

The earliest assaults against Japan proper—except for the Doolittle raid—were by B-29's of XX Bomber Command, staging through bases in China. Only 800 tons were dropped on Japan, though the command struck also at industrial targets in Manchuria and Korea. Its earliest target directives gave precedence to the steel industry, an objective which was basic to Japan's war industry. The limited effort devoted to this objective was much more effective than was then realized, but after a few missions the command turned its main attention to aircraft factories and installations in support of Pacific operations. Severe logistical restrictions prevented full use of the B-29's from China bases and led to the abandonment of those bases early in 1945. Thereafter, the command confined its activities mainly to south-

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east Asia, where appropriate targets were scarce. The total contribution of CBI-based B-29's to the dislocation of Japan's war economy was slight.[125]

The XXI Bomber Command, based in the Marianas, operated under far more favorable logistical conditions. The command got off to a slow start: between 24 November 1944 and 8 March 1945 its B-29's dropped only 7,180 tons of bombs, a weight more than exceeded by the combined tonnage of two days' missions in the last week of the war. First priority was given to daylight precision attacks against the aircraft industry, particularly against engine factories. These strikes, handicapped by adverse weather conditions, were only moderately successful in direct results, but they forced the Japanese to adopt a general program of dispersal of plants. Poorly conceived and executed, the dispersal program was never completed; under the impact of further bombing of aircraft and component factories, production of military planes declined at an accelerating rate.[126]

Beginning on 9 March, XXI Bomber Command changed its tactics, instituting a series of low-level night incendiary missions against urban areas. Within 10 days, 4 of Japan's largest cities had been attacked in 5 raids, involving 1,595 sorties and 9,373 tons of bombs, which destroyed a total built-up area of over 31 square miles. After diverting most of its effort in April and early May to tactical support of the Okinawa campaign, the B-29's returned to their primary mission with a flexible plan of operations, striking at individual industrial targets when weather permitted high-level precision bombing, at urban areas in night or radar incendiary missions when heavy cloud cover prevailed. In May and June, XXI Bomber Command finished off the half-dozen largest cities, then turned against those of secondary importance until by mid-August some 66 urban centers (including Hiroshima and Nagasaki) had been visited in area attacks which destroyed about 178 square miles of built-up area. These missions expended in sum a much heavier bomb weight than the precision attacks conducted concurrently, the ratio being determined by weather rather than by an absolute scale of priorities based on the intrinsic importance of targets. Figures cited by USSBS give an approximate measure of the distribution of effort among the several types of targets: urban areas, 104,000 tons; aircraft factories, 14,150 tons; oil refineries, 10,600 tons; arsenals, 4,708; miscellaneous industrial targets, 3,500 tons; airfields and seaplane bases in support of Okinawa, 8,115

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tons. This last item constituted the only serious departure from the strategic program. To the command those tactical operations were an unwelcome interlude in a campaign just gaining momentum, but the diversion of only about 5.5 per cent of the total effort was much less than had been suffered by heavy bomber forces in Europe or the B-29's in CBI. In addition to regular bombing missions, XXI Bomber Command B-29's dropped 12,054 mines and flew 1,478 miscellaneous sorties in weather and leaflet missions, in photo reconnaissance, radarscope and radar countermeasures, and sea search.[127]

The results of the B-29 attacks in terms of physical destruction could be measured with unusual accuracy, since in relatively few cases were the same targets hit also by Navy or other AAF planes. USSBS estimated that the total damage was roughly equivalent to that in Germany, although some 1,360,000 tons of bombs were dropped on that country, about 9 times the weight used by the B-29's against Japan. Here the attacks were more concentrated in time and in space, the targets more vulnerable, defense methods less effective, repair and reconstruction less rapid. About 40 per cent of the built-up areas in sixty-six cities was destroyed, while plants hit by high explosives in individual attacks showed a "generally more complete" destruction than in Germany.[128] The cost, calculated at 1.38 per cent of all B-29 combat sorties, was light by accepted standards for strategic bombardment. Relatively high at first, losses tapered off sharply as Japan's defenses were overwhelmed and as the command turned more frequently to night operations against which the Japanese never developed effective tactics. Measured by ETO standards, the losses inflicted by B-29 crews on intercepting enemy planes were also light, amounting in figures finally approved to 714 destroyed, 456 probables, and 770 damaged. The modesty of these claims undoubtedly reflects a more skilful screening than had been practiced in the early days in Europe, but the figures are also indicative of the feebleness of the Japanese air forces, who never staged any great air battles in defense of the homeland. A total of 11,026 attacks by Japanese fighters was reported, only about one for every three B-29 sorties.[129] If the relatively high returns from a moderate effort at low cost owed much to the vulnerability of Japanese cities weakly guarded by air forces already defeated before the B-29 attacks began, the success of the bombardment campaign still was made possible by the courage, intelligence, and industry of the members of the Twentieth Air Force.

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In a little more than a year of combat they greatly improved their handling of the superb plane with which they were equipped, increasing bomb loads, rate of operations, and bombing accuracy. General Spaatz, who was an expert if not wholly disinterested judge, described the B-29 force which he had just taken over as "the best organized and most technically and tactically proficient military organization that the world has seen to date."[130]

The economic effects of the VHB attacks were more difficult to assess than the physical since other causes contributed to the general breakdown of Japanese industry. The economic life of the nation, geared to military needs, had expanded steadily during the decade before Pearl Harbor. In large measure, industrial production depended on importing great quantities of raw materials—coal, iron, ferroalloys, nonferrous metals, rubber, oil, bauxite, etc. By stockpiling strategic commodities and munitions, the Japanese were able to conduct an all-out war for a brief period during which they easily overran regions richly endowed with needed raw materials. While still victorious they failed to mobilize production completely; when defeats came they were unable to do so efficiently. As late as 1943 the United States, with a production capacity ten times as great as the Japanese, was devoting a larger share of its output to direct war purposes. Even after seizing areas from which raw materials were extracted the Japanese could not exploit them fully because of lack of sufficient shipping, a lack which became increasingly critical as Allied submarines and planes began to sink more tonnage than could be replaced. Steel production, in part dependent upon imports of high grade ore and coking coal, reached its peak of 7,800,000 tons in 1943 and declined in 1944 to 5,900,000 tons, an amount barely larger than that turned out in 1937 and less than half of plant capacity. In the face of this serious shortage, the Japanese allocated highest priorities in steel to a few items which were most immediately vital to the conduct of the war and in those categories were able to increase production: aircraft and aircraft engines, aircraft and antiaircraft armament and ammunition, radar and communications equipment. Naval and cargo shipbuilding was the heaviest user of steel, consuming about 35 per cent of the total. Other military supplies such as tanks, trucks, and heavy artillery were slighted as being of less immediate utility. Imports of other basic commodities such as oil and bauxite similarly declined, as did food supplies needed to supplement those produced at home. The consumption of mate-

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rials from stockpiles and in the "pipeline" carried production increases past mid-1944 and in some categories into the autumn, but in most items, as in the total national effort, the downward turn had occurred before the B-29 attacks from the Marianas began.[131]

There was a rough correlation between the B-29 effort expended against the several war industries and the loss of production in each, but the indiscriminate nature of area attacks and the existence within each industry of special problems makes difficult any exact measurement of the net effects of air bombardment. Perhaps the best clue, if not a clear-cut answer, may be found in statistics compiled by USSBS on the decline of production within several key industries between the peak month of 1944 and July 1945 and on the reduction of "physical productive capacity" caused by air attack and dispersal incident thereto. During that period, consumption of coal and electric power, conventional indexes of industrial output, declined by about 50 per cent; the coal industry was not attacked by the B-29's and electric power plants suffered only incidentally in urban raids. Aircraft engine and airframe factories lost respectively 75 and 60 per cent of plant capacity, production falling to 25 per cent for the one, 40 per cent for the other. Here the almost perfect correlation was in the main accurate, but in oil refining, where air attack destroyed 83 per cent of capacity and production fell to 15 per cent of the peak, the remarkably close correlation was accidental: oil supplies had shrunk to a point where the refineries were working at so greatly reduced a rate that the B-29 campaign, very effective tactically, was in large part a work of supererogation. There was duplication of effort elsewhere, as in aluminum production where destruction of factories (35 per cent for light metals in general) was less important than the sharp decline in bauxite imports in reducing output to 9 per cent of the peak. Shipyards, suffering only 15 per cent physical loss, fell off in production to only 25 per cent of the peak; here shortage of steel was the chief limiting factor. On the other hand, severe losses in radar and radio output could be accounted for by bomb damage, particularly in area attacks which destroyed the small feeder plants upon which the industry depended. Thus, those industries singled out for air attack suffered more than industry in general, which showed an over-all decline to 40 per cent of the peak, but air attack was not the sole cause for the differential.[132]

After a study of industry in thirty-nine representative cities USSBS

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calculated that in plants damaged by air attack production had fallen by July 1945 to 27 per cent of the peak; in undamaged plants to 54 per cent; and in all plants, both damaged and undamaged, to 35 per cent. The difference between the last two figures, the survey estimated, constituted "a conservative indication of the impact of air attacks, both urban and precision, on production in those cities." If these figures are representative of Japanese industry as a whole, they suggest that strategic bombardment had less effect on production than did shortages imposed by the blockade.[133]

The blockade depended on interdiction and attrition of shipping; in both respects air power had been important, accounting by USSBS estimates for 40 per cent of all shipping sunk. Mines planted by the B-29's in a campaign that lasted only five months sank 9.3 per cent of all merchant tonnage lost during the war.[134] Members of the survey, in their hindsight evaluation of target selection, suggested that XX Bomber Command planes might have been more profitably employed against shipping and oil targets in the Outer Zone than in strikes from China bases, and that XXI Bomber Command should have devoted more effort toward exploiting the difficulties caused by earlier attacks on shipping. This latter task would have involved an intensification of the B-29 mining operations and a campaign against Japan's railway system. That system, overloaded because of the partial stoppage of traffic in the Inland Sea, was vulnerable to attack and the Japanese were in no position to effect rapid repairs. According to this theory, a carrier attack on the Hakodate-Amori ferry in August of 1944 (instead of July 1945) plus B-29 attacks on the Kammon Tunnel and on a score of chokepoints on the railways would have cut off all coal shipments and strangled Japan's economy.[135] Whether the rail interdiction could have been accomplished and maintained by the B-29's as easily as the survey suggests must remain conjectural since it was only at the very end of the war that they turned to rail targets.

Statements by various Japanese leaders that B-29 attacks were the main cause of the decline in production seem, then, to run counter to USSBS findings, but similar remarks as to the effects of the attacks on morale are borne out by the survey.[136] In nine months, B-29 raids caused 806,000 civilian casualties, of whom 330,000 were killed; the former figure exceeds slightly the Japanese estimate of 780,000 combat casualties among the armed forces during the whole war. During the great fire raids and the atomic bomb attacks Japanese air-raid protec-

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tion facilities were hopelessly swamped; on other occasions the fairly adequate warning system held casualties to a moderate number. Pre-raid evacuation and mass migration after attacks caused a vast displacement of population, estimated at 8,500,000 persons. The losses occurred when the health and vigor of the populace had already been sapped by the serious food shortage, itself the result of blockade. Undernourishment increased disease, hurt industry by reducing efficiency and encouraging absenteeism, and lowered morale.[137]

In a scientifically designed study of public opinion, USSBS found great uniformity in psychological reactions among various classes of society, whether urban or rural. The easy conquests of the early months of the war brought high confidence in eventual victory and since the government suppressed or warped all news of subsequent defeats, this optimism continued well into 1944: as late as June of that year apparently only 2 per cent of the people believed it probable that Japan would lose the war. After the fall of Saipan it became impossible to hide the major losses and in an endeavor to strengthen the war effort the government changed the nature of its propaganda. Reductions in the food ration and B-29 attacks, particularly those against urban areas, intensified the doubts caused by military failures and all morale indexes show a steady decline. The percentage of people believing Japan would lose the war rose to 10 in December 1944, 19 in March 1945, 46 in June, and 68 just before the surrender. Over half of those believing in eventual defeat "attributed the principal cause to air attacks, other than the atomic bombing attacks." By the end of the war 64 per cent of the populace had reached a point where they felt "personally unable to go on with the war." Here again the most important cause of defeatism was the air attacks, which for a majority of the respondents outweighed the other reasons most frequently given—military defeats and food shortages. This attitude toward air attacks pervaded the whole of Japan as evacuees from bombed cities infected other communities with their pessimism and as Allied planes flew over all parts of the home islands with hardly a challenge from the defenders.[138]

Lowered morale was reflected in a loss of faith in civil and military leadership and in the armed forces, in distrust of government propaganda, and in an increase of complaints and criticism. The tradition of passive obedience and the effectiveness of the police system prevented any open break, and it seems probable that the people would have

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continued to support the war so long as the Emperor commanded.[139] Nevertheless, the deterioration of morale was an important factor in Japan's defeat: it contributed to the decline in production and it influenced those leaders who finally engineered the surrender and who, incidentally, had arrived at a state of hopelessness earlier but from reasons not unlike those of the masses. The atomic bomb attacks contributed to a sense of defeatism in Hiroshima and Nagasaki, where morale had been better than average, but had a "more restricted" effect on civilian attitudes elsewhere.[140] The nature of the bomb was better understood by the military and the threat of additional attacks helped shape the surrender, but the chief importance of the bomb, as of Russia's declaration of war, was in providing an excuse to recalcitrant militarists. Even without those face-saving blows, in the opinion of the survey, "air supremacy over Japan could have exerted sufficient pressure to bring about unconditional surrender and obviate the need for invasion"—probably by 1 November, certainly by the end of December 1945.[141] The vast expansion of air operations contemplated—the B-29's were expected to reach a monthly rate of 115,000 tons of bombs during that period, as opposed to 42,700 tons in July[142]—makes that a reasonable assumption.

The USSBS wisely refrained from allotting to any single cause principal credit for the surrender. Under interrogation, Japanese leaders were less hesitant. Most of them ascribed primary importance to air power, many to air attack on the home islands. Prince Konoye said, "Fundamentally the thing that brought about the determination to make peace was the prolonged bombing by the B-29's." Premier Suzuki spoke in similar vein:

> It seemed to me unavoidable that in the long run Japan would be almost destroyed by air attack so that merely on the basis of the B-29's alone I was convinced that Japan should sue for peace. On top of the B-29 raids came the atomic bomb, immediately after the Potsdam Declaration, which was just one additional reason for giving in and was a very good one and gave us the opportune moment to open negotiations for peace. I myself, on the basis of the B-29 raids, felt that the cause was hopeless.[143]

These are oversimplified statements which neglect to mention the blockade with its tremendous effect on industry and on food supplies, but if such statements fairly represent the views of those who brought Japan to the surrender table on the *USS Missouri*, it matters little whether their evaluation of the importance of air attack was exaggerated or not.

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NOTES TO CHAPTER 1

1. Washington *Post*, 16 June 1944.

2. Ltr., C/AC to AS/W, 10 Nov. 1939. The materials covered in this and the next two chapters have been treated more fully in a study prepared earlier by the present author, AAF Reference Study No. 12, History of the Twentieth Air Force: Genesis [hereinafter cited AAFRH-12].

3. 1st ind. (ltr. cited in *n* 2 above), AS/W to C/AC, 2 Dec. 1939. Request for Data R-40B is found in AAG 452.1C, Heavy Bombers (Old).

4. Brett, Chief, Materiel Div. to C/AC, Appraisal of H. B. Airplanes, 3 June 1940.

5. 1st ind. (ltr., C/AC to AS/W, 22 June 1940), AS/W to C/AC, 28 June 1940.

6. AAF Materiel Comd., Research and Development Projects of the Engineering Division, Wright Field, 4th ed., 1 Jan. 1944, pp. 31–34. Subsequent details on the development of the B-29 and B-32, unless otherwise documented, are taken from this account. There is an impressionistic account, highly favorable to Boeing, in Thomas Collison, *The Superfortress Is Born* (New York, 1945). See also, D. N. Ahnstrom, "Evolution of the B-29," *Flying*, Aug. 1945, p. 34 ff.

7. Hist. 58th Bomb. Wg. (H), First Phase.

8. *Ibid.*

9. Memo for AC/S WPD from Arnold, 30 Apr. 1940.

10. Memo for DC/AS from Echols, 30 Sept. 1942.

11. "Bombers by Beall," *Fortune*, XXX (Oct. 1944), 185.

12. Collison, *Superfortress*, pp. 110–32.

13. Research and Development Projects, pp. 31–34.

14. *Ibid.*

15. Memo for S/AS from Echols, 6 Nov. 1943.

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21. CPS 49/1, Planning for Operations Subsequent to TORCH, Incl. B, 27 Nov. 1942; AC/AS Plans, Div. Digest, 25 Mar. 1943.

22. CM-IN-890 (2 Mar. 43), London to WAR, #115, 2 Mar. 1943; CM-OUT-10085 (26 Mar. 43), AFACT to CG 8th AF, #A-1893, 26 Mar. 1943; CM-IN-2454 (4 Dec. 43), London to WAR, #W-8085/508, 3 Dec. 1943; CM-OUT-1946 (5 Dec. 43), WAR to CG 8th AF, #A-4741, 5 Dec. 1943.

23. Ltr., CG Antisub. Comd. to CG AAF, 17 Apr. 1943, and 1st ind. thereto, CG AAF to CG Antisub. Comd., 28 May 1943.

24. R&R, AC/AS Plans to C/AS, B-29's to the Navy, 7 July 1943.

25. CM-OUT-67 (24 Mar. 42), AFRBS to New Delhi, #AAF-RC-211, 24 Mar. 1942.

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26. CM-IN-4180 (13 June 42), Ft. Shafter to WDCSA, #771, 13 June 1942.

27. R&R, (ltr., Harmon to CG AAF, 20 Sept. 1942), AFAEP to AFTSC, 7 Oct. 1942.

28. CM-IN-8074 (13 June 43), Brisbane to CG AAF, #XA5312, 13 June 1943; ltr., Kenney to Arnold, 28 July 1943.

29. CM-OUT-10849 (25 Oct. 43), CINCSWPA #9577, 25 Oct. 1943; ltrs., Kenney to Arnold, 29 Oct. and 6 Nov. 1943.

30. CM-OUT-5748 (14 Nov. 43), CINCSWPA #481, 14 Nov. 1943; ltr., Giles to Kenney, 18 Nov. 1943.

31. AAFRH-9, The Fourteenth Air Force to 1 Oct. 1943, chaps. 1 and 2. The pertinent planning and action papers and minutes of the committee meetings are gathered together in the TRIDENT Conference Book. See also *The Stilwell Papers* (New York, 1948), pp. 203–6. The Chinese Minister, Dr. T. V. Soong, described China's dangerous situation and summed up her needs at TRIDENT (CCS 86th Mtg., 17 May 1943).

32. AAFRH-9, pp. 24–26; interview with Gen. Chennault, 5 Apr. 1948. Stilwell said "Chennault promised to drive the Japs right out of China in six months" (*Stilwell Papers*, p. 204; see also C. L. Chennault, *Way of a Fighter* [New York, 1949], pp. 219–26).

33. *Stilwell Papers*, p. 204.

34. CCS 242/6, 25 May 1943.

35. CCS 220.

36. CCS 90th Mtg., 20 May 1943.

37. CPS 83, 8 Aug. 1943; CCS 102d Mtg., 16 June 1943.

38. CM, OPNAV to ALUSNA, Chungking, President and Prime Minister to CKS, 25 Aug. 1943; QUADRANT Conference Book, p. 390.

39. CCS 313, 18 Aug. 1943; CCS 313/1; CCS 113th Mtg., 20 Aug. 1943.

40. CCS 301, 18 Aug. 1943; CCS 114th Mtg., 21 Aug. 1943; CCS 301/3, 27 Aug. 1943.

41. CCS 319/5, 24 Aug. 1943.

42. *Ibid.*

43. *Ibid.*, par. 44.

44. CCS 323, 20 Aug. 1943.

45. AC/AS Plans, Div. Digest, 25 Mar., 31 Mar., and 10 May 1943.

46. Memo for Marshall from FDR, 15 Oct. 1943.

47. CCS 107th Mtg., 14 Aug. 1943.

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52. CM-IN-9027 (11 Sept. 43), AQUILA to WAR, #2106 TA, 11 Sept. 1943.

53. *Stilwell Papers*, p. 204.

54. CM-OUT-7981 (16 Sept. 43), Oliver to AQUILA, #3350, 16 Sept. 1943; CPS 86/1, 13 Sept. 1943.

55. Memo for JPS from AAF Planner, Plans for the Defeat of Japan within 12 Months after the Defeat of Germany, 16 Sept. 1943.

56. CCS 301, 18 Aug. 1943.

57. JPS 264, 6 Sept. 1943 and corrigendum of 10 Sept.

58. Plans for the Defeat of Japan, as in *n* 55 above.

59. C/AS to AC/AS Intel., MM&D, OC&R, and CG ATC, Special Study: Air Attack on Japan, 16 Sept. 1943; memo for C/AS from Board, 20 Sept. 1943.

60. Hist. 58th Bomb. Wg. (H), First Phase, II, 30. The mission is so described in the second version of Wolfe's plan, as cited in *n* 62 below.

61. Memo for C/AS from K. B. Wolfe, A Plan for the Employment of B-29 Airplanes against Japan during the Summer of 1944, 24 Sept. 1943.

62. A Plan for the Employment of the B-29 Airplane against Japan Proper, n.d.

63. *Ibid.*, par. 4.

64. Ltr., Wolfe to Arnold, Plan for the Operation of the B-29 Airplane, 12 Oct. 1943.

65. Ind. to letter in *n* 64.

66. Memo for Marshall from FDR, 15 Oct. 1943.

67. Memo for Arnold from S/AS, 15 Oct. 1943; draft reply, Marshall to FDR, 18 Oct. 1943. The final message was slightly altered. See also memo for C/S from Arnold, 23 Oct. 1943.

68. CM-OUT-5183 (12 Oct. 43), AM-

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MISCA #3575, 12 Oct. 1943; CM-OUT-6963 (16 Oct. 43), AMMISCA #3610, 15 Oct. 1943; CM-IN-11422 (19 Oct. 43), Chungking to AGWAR, #819, 18 Oct. 1943; CM-IN-15988 (27 Oct. 43), New Delhi to AGWAR, #W2542, 31 Oct. 1943.

69. JPS 320, 9 Nov. 1943.

70. Memo for CG AAF from AC/AS MM&D, 27 Oct. 1943; JPS 113th Mtg., 9 Nov. 1943; memo for Sec. JWPC from Sec. JPS, 10 Nov. 1943.

71. JCS 600, 11 Nov. 1943.

72. Memo for C/S from CG AAF, 13 Nov. 1943; CM-417 (10 Nov. 43), FDR to PM; CM (10 Nov. 43), FDR to CKS; CM-IN-8594 (14 Nov. 43), Chungking #876, 14 Nov. 1943; CCS 401/1, VLR Airfields, 23 Nov. 1943.

73. CM-OUT-3611 (9 Nov. 43), AQUILA #3689, 9 Nov. 1943; CM-OUT-4344 (11 Nov. 43), AMMISCA #3815, 11 Nov. 1943.

74. Memo for AC/AS OC&R from CG AAF, 8 Nov. 1943.

75. Memo for C/S from CG AAF, 13 Nov. 1943, and ind. thereto, C/S to S/W.

76. See memo cited above in *n* 74.

77. CM-IN-12478 (20 Nov. 43), Marshall to McNarney, NC128143, 20 Nov. 1943; CM-OUT-8237 (20 Nov. 43), SEXTANT #1009; CM-IN-12393 (20 Nov. 43), Arnold to Giles, NCK 8049; CM-IN-15448 (25 Nov. 43), SEXTANT to WAR, #10037, 25 Nov. 1943; CM-IN-16119 (25 Nov. 43), SEXTANT to AGWAR.

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82. JWPC 147/D, 25 Nov. 1943.

83. *Stilwell Papers*, pp. 242–45.

84. *Ibid.*; CCS 129th Mtg., 24 Nov. 1943.

85. JCS 130th Mtg., 25 Nov. 1943.

86. *Stilwell Papers*, p. 250.

87. CCS 426/1, 6 Dec. 1943, par. 9.

88. SEXTANT Conference Book, p. 495.

89. CCS 137th Mtg., 6 Dec. 1943.

90. CCS 417, 2 Dec. 1943.

91. CCS 426/1, 6 Dec. 1943, approved in 5th plenary session, 7 Dec. 1943.

92. Apparently on 2 Dec. 1943. See CM-IN-1139 (2 Dec. 43), SEXTANT to AGWAR, #10094.

93. CCS 397, par. 7.

94. JPS 117th Mtg., 22 Dec. 1943.

95. CM-IN-626 (1 Dec. 43), SEXTANT #10008, 1 Dec. 1943.

96. Hist. of the Orgn. and Opns. of the COA, pp. 1–6.

97. *Ibid.*, p. 59.

98. *Ibid.*, p. 63.

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101. Rpt. of COA, p. 4.

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105. JPS 381, 24 Jan. 1944.

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5. JCS 600, 11 Nov. 1943; CCS 401, 18 Nov. 1943.
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23. Ltr., Arnold to Stratemeyer, 28 Aug. 1943.
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40. CM-IN-3490 (6 Jan. 44), Sultan to Marshall, AG 88, 6 Jan. 1944; CM-IN-5998 (9 Jan. 44), Stilwell to Marshall, AG 163, 9 Jan. 1944.
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19. CM-IN-155155 (22 Feb. 44), New Delhi to WD, #509, 22 Feb. 1944.

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41. Forward Area, p. 15.

42. Ltr., Godfrey to Col. George Mayo, 8 Jan. 1944; Forward Area, p. 16.

43. Forward Area, pp. 18–20.

44. Brooks Atkinson in N.Y. *Times*, 17 June 1944.

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47. CM-IN-11893 (19 Dec. 43), Chungking to AGWAR, #946, 19 Dec. 1943.

48. CM-IN-15685 (25 Dec. 43).

49. CM-OUT-8195 (19 Dec. 43), AMMISCA #4100, 19 Dec. 1943; memo for record, 20 Dec. 1943, D.2 MATTERHORN.

50. CM-IN-351 (1 Jan. 44), Chungking to AGWAR, #1, 1 Jan. 1944.

51. CM-OUT-1223 (4 Jan. 44), Marshall to Stilwell, #4199, 4 Jan. 1944; CM-IN-4645 (8 Jan. 44), Stilwell to Marshall, AG 18, 7 Jan. 1944.

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53. Ltr., Voynow to Farthing, 4 Jan. 1944.

54. AAFRH-12, p. 171.

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59. XX BC, Third Phase, p. 162; Forward Area, p. 18.

60. Forward Area, p. 18.

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63. Airfields in Unoccupied China, 20 Feb. 1944; Forward Area, pp. 10–22.

64. CM-IN-6334 (10 Jan. 44), Wedemeyer to Marshall, #97, 10 Jan. 1944.

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74. CM-IN-20648 (29 Mar. 44), Kuter (SWPA Hq.) to Arnold, AX30385, 28 Mar. 1944.

75. CM-IN-21136 (29 Mar. 44), AQUILA #W903, 20 Mar. 1944.

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88. CM-OUT-1560 (5 Jan. 44), AMMISCA #4205, 5 Jan. 1944; CM-IN-8970 (14 Jan. 44), New Delhi, W113, 13 Jan. 1944.

89. Memo for CG ATC from Arnold, 7 Feb. 1944.

90. CM-IN-9483 (14 Feb. 44), AMMDEL #940, 13 Feb. 1944.

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92. AAFRH-12, p. 192.

93. CM-OUT-390 (1 Mar. 44), AQUILA #4824, 1 Mar. 1944.

94. Hist. North African Wg. ATC, May 1944, pp. 21–22.

95. CM-OUT-6275 (15 Mar. 44), AQUILA #5021, 13 Mar. 1944.

96. Hist. NAW ATC, June 1944, p. 34.

97. AAFRH-12, p. 194.

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99. AAFRH-12, pp. 194–95.

100. *Ibid.*, p. 196.

101. *Report*, as in *n* 78 above, p. 31.

102. See the long list of cables in AAFRH-12, p. 197, *n* 55.

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105. CM-IN-8596 (12 Mar. 44), Cook to Arnold, 5101, 12 Mar. 1944.

106. XX BC, Third Phase, p. 96.

107. CM-OUT-129 (1 Mar. 44), AQUILA #4812, 1 Mar. 1944.

108. CM-OUT-4343 (10 Mar. 44), AQUILA #4964, 10 Mar. 1944.

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113. Digests of Domei News Service broadcasts of 23 and 24 April and 15 May in XX BC Air Intelligence Digest, Vol. I (20 May 1944) and Vol. II (27 May 1944).

114. Hist. NAW ATC, Apr., May, June 1944; CM-IN-9888 (14 Mar. 44), Wolfe to Arnold for ATC, #162D, 14 Mar. 1944.

115. AAFRH-12, p. 200.

116. XX BC, Third Phase, p. 101.

117. Ltr., Arnold to Wolfe, 26 Apr. 1944.

118. A document, marked simply "Plan," printed out by hand and dated at 14th AF Hq., Chungking, 3 Sept. 1943. It is initialed by Chennault, Beebe, and Harmon, and indorsed by Stratemeyer on 10 Sept. 1943.

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120. Plans, Daily Digest, 1 Jan. 1944; CM-IN-2139 (4 Jan. 44), Stratemeyer to Arnold, W25, 4 Jan. 1944.

121. Memo for Hansell from Loutzenheiser, 17 Jan. 1944; memo for Capt. A. K. Doyle, USN, from Hansell, 18 Jan. 1944.

122. Med. Hist. 33d Ftr. Gp. (an unusually well-written unit history); 81st Ftr. Gp. War Diary, Mar. 1944.

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124. 14th AF GO 17, 13 Mar. 1944; CM-OUT-3952 (10 Dec. 43), Arnold to AQUILA, #3952, 10 Dec. 1943; CM-IN-7131 (11 Dec. 43), Stratemeyer to Arnold, W2878, 11 Dec. 1943.

125. AAFRH-12, p. 204, especially ltr., Maj. G. A. Stinson to Col. George Carey, quoted in *n* 91.

126. CM-IN-16950 (24 Feb. 44), Chennault to Arnold, COGUK W22FB, 24 Feb. 1944; CM-IN-17774 (25 Feb. 44), Stratemeyer to Arnold, AQUILA #W559, 25 Feb. 1944.

127. CM-IN-3289 (5 Mar. 44), Stratemeyer to Arnold, W641 AOX, 5 Mar. 1944.

128. CM-IN-5347 (8 Mar. 44), Stratemeyer to Arnold, W678, 8 Mar. 1944.

129. Med. Hist. 33d Ftr. Gp.; 81st Ftr. Gp. War Diary, May, June, July, 1944.

130. Col. W. P. Fisher, Asst. A-3 58th Bomb. Wg., had been sent out to command the group; XX BC, Third Phase, p. 47.

131. CM-IN-12153 (19 Dec. 43), AQUILA #W2944, 19 Dec. 1943; ltr., Stratemeyer to Arnold, 3 Feb. 1944; CM-IN-3499 (5 Feb. 44), Stratemeyer to Marshall.

132. CM-IN-4866 (7 Feb. 44), Stratemeyer to Arnold, W362, 7 Feb. 1944; CM-IN-954 (2 Feb. 44), AMMDEL AG 666, 1 Feb. 1944; memo for Kuter from Loutzenheiser, 2 Feb. 1944.

133. CM-IN-11476 (16 Apr. 44), CAB 16169, 15 Apr. 1944. Note the discrepancies in figures on the Chengtu deliveries: ATC, 383 tons; XX BC Stat. Sec., 427 (Wolfe, XX BC Prog. Rpt. #4, 3 Apr. 1944); ASC CBI, 116 tons (CM-IN-11476 [16 Apr. 44], Stilwell to Marshall, CAB 16169, 15 Apr. 1944).

134. ICW ATC, Story of Spring Diversions, Feb. to June 1944; Hist. India-China Div. ATC, 1944, Vol. I, chap. 4.

135. CM-IN-11476 (16 Apr. 44), Stilwell to Marshall.

136. CM-IN-16339 (21 Apr. 44), Wolfe to Arnold, YB1733, 21 Apr. 1944; XX BC Prog. Rpt. #4, 30 Apr. 1944. See Chennault's version of this whole deal in *Way of a Fighter*, pp. 278–84.

137. Ltr., Maj. G. A. Stinson to Lt. Col. J. D. Garcia, 22 Dec. 1944; CM-IN-15468 (24 Dec. 43), AQUILA #W2988, 24 Dec. 1944.

138. CM-IN-11079 (15 Apr. 44), Wolfe to Arnold, T29A, 15 Apr. 1944.

139. CM-IN-16401 (23 Mar. 44), Stratemeyer to WAR, W836 RACX, 23 Mar. 1944; XX BC Memo 55–9, 15 Apr. 1944; CM-IN-20510 (28 Apr. 44), Wolfe to Arnold, YB2005, 27 Apr. 1944.

140. AAFRH-12, p. 213.

141. CM-IN-16339 (21 Apr. 44), Wolfe to Arnold, YB1733, 21 Apr. 1944; Prog. Rpt. #4, 30 Apr. 1944.

142. Prog. Rpt. #4.

143. AAFRH-12, pp. 215–17; memo for CG AAF from C. R. Smith, DC/S ATC, 15 May 1944; CM-OUT-36950 (15 May 44), Arnold to Stratemeyer, Wolfe, Hardin.

144. Ltr., CG AAF IBS to CG XX BC and CG ICW, 26 May 1944.

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Transport Prospect, pp. 32–33 [hereinafter cited Transport Project].

146. *Ibid.*, p. 31.

147. *Ibid.*, pp. 33–34; memo for AC/AS Plans from Lt. Col. J. W. Wilson, 26 Apr. 1944; Prog. Rpt. #4, p. 11.

148. CM-IN-90 (1 May 44), Wolfe to Echols, A-22135, 3 Apr. 1944; WD-TT-518 (3 June 44), Washington-Kharagpur.

149. AAFRH-12, p. 219.

150. CM-IN-11782 (16 May 44), XX BC to WD, YB2918, 16 May 1944.

151. Memo for Staff Secs. from CG XX BC, 26 May 1944.

152. CM-IN-2827 (4 June 44), Stilwell to JCS, 1148, 4 June 1944; CM-OUT-46820 (6 June 44), JCS to Stilwell, WARX 46820, 6 June 1944; CM-IN-5027 (7 June 44), Stilwell to WD, CFBY 18238, 6 June 1944; CM-OUT-47296 (7 June 44), Stilwell to Marshall, CHC 1173, 9 June 1944.

153. CM-OUT-46999 (6 June 44), WD to Wolfe; CM-IN-5597 (7 June 44), Wolfe to WD, 4269A; CM-OUT-47759 (8 June 44), WD to Wolfe.

154. Chennault, *Way of a Fighter*, p. 278.

155. Transport Project, p. 39.

156. CM-IN-1319 (2 July 44), Chennault to WD, CADX 4378, 2 July 1944.

157. Transport Project, p. 38.

158. *Ibid.*, p. 41.

159. CM-OUT-51560 (16 June 44), Hansell to Marshall and Arnold at London.

160. Transport Project, p. 40.

161. CM-OUT-46999 (6 June 44), WD to Wolfe; T-CON-OUT (no number), Washington-Kharagpur, 23 June 1944; T-CON-OUT (no number), Washington-Kharagpur, 10 June and 21 June 1944; memo for CG ATC from Arnold, 10 July 1944; T-CON-IN-YB231, Kharagpur-Washington, 9 Aug. 1944.

162. CM-OUT-56673 (27 June 44), WD to CG XX BC.

163. Transport Project, p. 41.

164. *Ibid.*, p. 43.

165. CM-IN-21219 (26 June 44), Chennault to WD, CADX 4019, 25 June 1944.

166. Direc., CG AAF IBS to CG XX BC, 13 June 1944.

167. CM-IN-1319 (2 July 44), Chennault to WD, CADX 4378, 2 July 1944.

168. Transport Project, p. 43.

169. CM-IN-2546 (4 July 44), Stratemeyer to WD, CABX 2917, 3 July 1944; CM-IN-24632 (30 June 44), Stratemeyer to Chennault, CABX 2796, 30 June 1944; CM-IN-1914 (3 July 44), Chennault to WD, CADX, 2 July 1944.

170. Transport Project, p. 47.

171. AAFRH-12, p. 227.

172. Transport Project, pp. 48–57, and stat. charts attached thereto.

173. *Ibid.*, pp. 80–83.

174. *Ibid.*, pp. 68–70.

175. Walkout Rpts., XX BC; Lolo Rpt. by Capt. Frank Mullen.

NOTES TO CHAPTER 4

1. For statistics on XX BC, see XX BC, Digest of Opns., 30 Nov. 1944, and Hist. XX BC, Fifth Phase, Table of Combat Missions; for statistics on VIII BC, see table in Vol. II, 841 ff.

2. JCS 742/6, 6 Apr. 1944; Draft, App. A, Air Estimate and Plan, First Phase of MATTERHORN (Apr. to Sept. 1944).

3. Hist. XX BC, Fourth Phase: Shakedown on Bangkok, pp. 5–8 [hereinafter cited Shakedown].

4. XX BC A-3 Div. Daily Diary, 14, 17 May 1944.

5. CM-OUT-38988 (19 May 44), Arnold to Wolfe.

6. CM-IN-3604 (5 June 44), YB4119, 4 June 1944.

7. XX BC A-3 Div. Daily Diary, 6 May 1944; Shakedown, p. 13.

8. TMR, Mission No. 1, 5 June 1944, dtd. 26 June 1944, pp. 1–2 [hereinafter this series cited TMR #1, #2, etc.].

9. Shakedown, pp. 12–13; 58th Bomb. Wg. FO 2, 2 June 1944.

10. TMR #1, p. 3; Shakedown, pp. 16–17.

11. TMR #1, pp. 3–4; Shakedown, pp. 18–19.

12. 58th Bomb. Wg. FO 2, 2 June 1944.

13. Shakedown, pp. 19–20.

14. *Ibid.*, p. 20; TMR #1, p. 4.

15. TMR #1, p. 4.

16. *Ibid.*, pp. 4–5 and Annexes Band F. For an eyewitness account of the mission, see also Narrative Rpt. of Combat Observer, Hq. XX BC, 8 June 1944.

17. TMR #1, p. 5; Shakedown, pp. 22–25; Accident to Plane #42–6361, 6 June 1944.

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18. Narrative of Ditching of Crew of A/C #282, 8 June 1944.
19. Narrative of Ditching of Crew of A/C #304, 11 June 1944.
20. TMR #1, pp. 5, 8–9, and Annex I.
21. CM-OUT-46999 (6 June 44), WD to Wolfe.
22. JPS 320, 9 Nov. 1944; JCS 742/6, 6 Apr. 1944; Hist. XX BC, Fourth Phase: Yawata I, p. 10 [hereinafter cited Yawata I]; TC-527, Washington-Kharagpur, 5 June 1944.
23. CM-IN-5597 (7 June 44), Wolfe to WD, #4669a, 7 June 1944.
24. CM-OUT-47759 (8 June 44), WD to Wolfe, WARX 47759, 7 June 1944.
25. TC-535, Kharagpur-Washington, 8 June 1944.
26. Yawata I, pp. 10–15.
27. TMR #2, 15/16 June 1944 (5 July 44), p. 1.
28. Memo for Arnold from Hansell, 5 June 1944.
29. TMR #2, pp. 1–2.
30. CM-OUT-46999 (6 June 44), WD to Wolfe.
31. TMR #2, pp. 2–3.
32. CM-IN-8938 (12 May 44), A2715, 11 May 1944; CM-OUT-36449 (13 May 44), Arnold to Wolfe; CM-OUT-47977 (8 June 44), Arnold to Wolfe; Yawata I, p. 15.
33. TMR #2, p. 5 and Annex B.
34. *Ibid.*, p. 5.
35. *Newsweek*, 26 June 1944, p. 34; *Time*, 26 June 1944, pp. 26–27; N.Y. *Times*, 16 June 1944.
36. TMR #2, pp. 7–8 and Annex C.
37. *Ibid.*, pp. 6, 9.
38. Rpt., Search Mission to Wutu; rpt., Search Mission to Woofootzie; Yawata I, pp. 28–48.
39. Loss of A/C #293; Yawata I, pp. 23–27; CM-IN-14697 (18 June 44), FE 237 YD, 18 July 1944.
40. TMR #2, Annex K.
41. *Ibid.*, p. 6.
42. TC-E-100, Kharagpur-Washington, 7 July 1944.
43. TMR #2, p. 13 and Annex J.
44. CM-OUT-52768 (17 June 44), Bissell to Wolfe; TC (no number), Washington-Kharagpur, 23 June 1944; Yawata I, pp. 49–51; TMR #2, Annex L.
45. CM-IN-12242 (15 June 44), Wolfe to Arnold, Kharagpur #217, 15 June 1944, announced "bombs away."
46. CM-OUT-32–36 (4 May 44), Surlees to PRO's of SACSEA, AAF IBS, and XX BC.
47. CM-OUT-47977 (8 June 44), Smith to Higgins; CM-OUT-72016 (28 July 44), Hansell to Saunders.
48. CM-OUT-42454 (17 June 44), Arnold to Wolfe.
49. TC, Kharagpur-Washington, 21 June 1944.
50. CM-OUT-56673 (27 June 44), Arnold to Wolfe.
51. TC, Kharagpur-Washington, 29 June 1944.
52. TC, Kharagpur-Washington, 30 June 1944.
53. Memo for Arnold from Hansell, 1 July 1944.
54. CM-OUT-60032 (4 July 44), Arnold to Wolfe.
55. Ltr., Arnold to Spaatz, 29 Sept. 1944; Hist. XX BC, July 1944, p. 3. Wolfe described his new assignment, after reaching Washington, in TC, Washington-Kharagpur, 11 July 1944. Neither in this nor in his farewell address to his command (Hq. XX BC Memo, 5 July 1944) did he indicate any emotion other than a normal regret at leaving an important combat command.
56. Hist. XX BC, Fourth Phase: Mission Three, p. 7.
57. TMR #3, 7/8 July 1944 (7 Aug. 44), pp. 1–2; XX BC FO 3, 3 July 1944.
58. TMR #3, pp. 5–7.
59. *Ibid.*, pp. 7–8 and Annexes C and J.
60. CM-OUT-60627 (5 July 44), Arnold to Wolfe.
61. TC, Washington-Kharagpur, 7 July 1944.
62. TC-E-100, Kharagpur-Washington, 7 July 1944.
63. Hist. XX BC, July 1944, p. 13.
64. XX BC, Digest of Opns., 30 Nov. 1944.
65. *Ibid.*
66. TC-E-100, Kharagpur-Washington, 7 July 1944.
67. TMR #4, 29 July 1944 (13 Sept. 44), p. 107.
68. *Ibid.*, pp. 1–2.
69. *Ibid.*, p. 5.
70. *Ibid.*, pp. 5–6.
71. *Ibid.*, pp. 7–8 and Annex C.

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72. Hist. XX BC, Fourth Phase: Anshan I, pp. 23–31.
73. *Ibid.*, pp. 31–37.
74. TMR #4, pp. 6–7.
75. *Ibid.*, pp. 10–12 and Annexes K and L.
76. JPS 426/1, 18 Apr. 1944; JCS 797/1, 20 Apr. 1944; TMR #5, 10/11 Aug. 1944 (22 Sept. 44), pp. 1–2.
77. Hist. XX BC, Fourth Phase: Double-Strike, Palembang-Nagasaki, p. 19; CM-OUT-56673 (27 June 44), Arnold to Wolfe; CM-OUT-60627 (5 July 44), Arnold to Wolfe.
78. Double-Strike, pp. 7–15; TMR #5, p. 3.
79. CM-OUT-56673 (27 June 44), Arnold to Wolfe.
80. TC-E-117, Kharagpur-Washington, 10 July 1944; CM-OUT-60627 (5 July 44), Arnold to Saunders; TC-E-146, Kharagpur-Washington, 13 July 1944; CM-OUT-65490 (15 July 44), Arnold to Saunders.
81. TMR #5, pp. 2–3.
82. Double-Strike, pp. 26–28.
83. *Ibid.*, pp. 28–30; TMR #5, pp. 6–7.
84. TMR #5, pp. 7–8.
85. *Ibid.*, pp. 8, 15.
86. *Ibid.*, p. 8.
87. *Ibid.*, pp. 9–10 and Annex C.
88. Double-Strike, pp. 36–44; Rpt. on Ditching of A/C #420.
89. Damage Assessment Rpt. #6 (Prov.), 20 Aug. 1944.
90. TC-Q-370, Kharagpur-Washington, 24 Aug. 1944.
91. TC-E-165, Kharagpur-Washington, 22 July 1944; TC, Kharagpur-Washington, 2 Oct. 1944; TC-3-2, Washington-Kharagpur, 3 Oct. 1944; TC, Washington-Kharagpur, 25 July 1944; TC, Kharagpur-Washington, 26 July 1944; TC, Washington-Kharagpur, 28 July 1944.
92. Air Estimate and Plan, First Phase of MATTERHORN, 1 Apr. 1944; CM-OUT-59762 (3 July 44), Arnold to Wolfe; TMR #6, 10/11 Aug. 1944 (28 Sept. 44), pp. 2–3.
93. TMR #6, p. 3; TC, Kharagpur-Washington, 26 July 1944; CM-OUT-71061 (26 July 44), Arnold to Saunders; TC-E-170, Kharagpur-Washington, 27 July 1944; TC, Washington-Kharagpur, 28 July 1944.
94. TMR #6, p. 4 and Annex A; XX BC FO 6, 1 Aug. 1944.
95. TMR #6, pp. 3–5.
96. *Ibid.*, pp. 5–6 and Annex C; Double-Strike, pp. 49–50.
97. TMR #6, p. 5; Double-Strike, pp. 51–56; Rpt. on Forced Landing of A/C #359.
98. TC-E-204, Kharagpur-Washington, 1 Aug. 1944.
99. CM-IN-15453 (19 June 44), Chennault to WD.
100. CM-IN-2363 (3 Aug. 44), Chennault to WD.
101. TC-4-4, Washington-Kharagpur, 4 Aug. 1944; TC-E-223, Kharagpur-Washington, 5 Aug. 1944.
102. CAKX 6082 (10 Aug. 44), Chennault to WD; CM-OUT-79786 (11 Aug. 44), WD to Chennault; Decisions, Plans, and Actions Leading to Operations of 20th AF.
103. CM-IN-21388 (23 Aug. 44), Stratemeyer to Arnold, CABX 4937.
104. TC-E-130, Kharagpur-Washington, 10 July 1944; Hist. XX BC, Fourth Phase: Yawata II, pp. 4–5.
105. TC-E-212, Kharagpur-Washington, 4 Aug. 1944; TMR #7, 20/21 Aug. 1944 (28 Sept. 44), pp. 3–4.
106. TMR #7, p. 4 and Annex M.
107. *Ibid.*, pp. 5–7 and Annexes A and B.
108. *Ibid.*, pp. 7–10 and Annex C.
109. *Ibid.*, p. 14 and Annex L; TC (unnumbered) Washington-Kharagpur, 2 Aug. 1944; CM-OUT-84694 (30 Dec. 44), Arnold to LeMay; *Flying*, June 1948, p. 28 ff.
110. TMR #7, p. 9 and Annex J; USSBS, Effects of Strategic Bombing on Japanese War Economy, App. ABC, p. 45.
111. CM-IN-5353 (6 Aug. 44), Saunders to Arnold; CM-OUT-76846 (7 Aug. 44), Arnold to Saunders; TC-J-363, Kharagpur-Washington, 23 Aug. 1944; TMR #8, 8 Sept. 1944 (1 Oct. 44), p. 3.
112. TC-Q-233, Kharagpur-Washington, 9 Aug. 1944; TC-10-10, Washington-Kharagpur, 10 Aug. 1944; TC-E-303, Kharagpur-Washington, 17 Aug. 1944; TC-19-2, Washington-Kharagpur, 19 Aug. 1944; TC-J-363, Kharagpur-Washington, 23 Aug. 1944; TMR #8, p. 3.

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113. TC-29-6, Washington-Kharagpur, 29 Aug. 1944.

114. TC-G-385, Kharagpur-Washington, 29 Aug. 1944.

115. CM-OUT-62749 (10 July 44), Arnold to Saunders; TC-5-2, Washington-Kharagpur, 5 Aug. 1944.

116. Hist. XX BC, Fourth Phase: Anshan II and III, p. 6.

117. TMR #8, pp. 4–7 and Annex A.

118. *Ibid.*, pp. 8–9 and Annexes C and J.

119. *Ibid.*, pp. 11–13 and Annex L.

120. Anshan II and III, pp. 19–21; Enemy Bombing of A-1 Hq. 40th Bomb. Gp., 15 Sept. 1944.

121. Anshan II and III, pp. 22–24.

122. *Ibid.*, pp. 24–27; Hist. XX BC, Sept. 1944, pp. 12–13.

123. TC-6-3, Washington-Kharagpur, 6 Sept. 1944; TC-Q-430, Kharagpur-Washington, 8 Sept. 1944; TC-13-4, Washington-Kharagpur, 13 Sept. 1944.

124. TMR #9, 26 Sept. 1944 (13 Oct. 44), pp. 1–6, 11, and Annex L.

125. *Ibid.*, pp. 6–7.

126. *Ibid.*, pp. 8–9 and Annex C.

127. Anshan II and III, p. 37.

128. TC-E-465, Kharagpur-Washington, 11 Sept. 1944; TC-E-474, Kharagpur-Washington, 12 Sept. 1944; TC-E-512, Kharagpur-Washington, 19 Sept. 1944; TC-E-634, Kharagpur-Washington, 3 Oct. 1944; TC-E-687, Kharagpur-Washington, 9 Oct. 1944; 14th AF Opns. in the Chengtu Area, Jan.–Dec. 1944, *passim.*

129. Hist. XX BC, Fourth Phase: Reorganization, p. 5 [hereinafter cited Reorganization].

130. *Ibid.*, pp. 18–21.

131. Hist. XX BC, Apr. 1944, p. 6; May 1944, p. 6.

132. CM-IN-6987 (10 May 44), Wolfe to Arnold, A2584, 9 May 1944; CM-IN-7017 (10 May 44), Stratemeyer to Arnold, 9 May 1944; CM-IN-8670 (12 May 44), Wolfe to Arnold, E2707, 11 May 1944; CM-OUT-36410 (13 May 44), Arnold to Wolfe; ltr., CG AAF IBS CBI to CG XX BC, Div. of Admin. Responsibilities, 13 June 1944.

133. T/O&E #1-452 T, 15 Apr. 1944.

134. CM-IN-6987 (10 May 44), Wolfe to Arnold, A2584, 9 May 1944.

135. CM-OUT-35369 (11 May 44), Arnold to Wolfe; Hist. XX BC, May 1944, p. 8.

136. AAF IBS CBI GO 97, 23 June 1944; XX BC GO 13, 30 June 1944.

137. Reorganization, pp. 20–21.

138. *Ibid.*, pp. 21–22, 25; Hist. XX BC, June 1944; CM-IN-9957 (12 June 44), Wolfe to Arnold, Y4591, 12 June 1944.

139. Ltr., Saunders to Hq. AAF, 30 Mar. 1944 and 1st ind. thereto, Arnold to Saunders, 20 Apr. 1944; Reorganization, pp. 8–10.

140. Hist. XX BC, May 1944; Reorganization, p. 9.

141. CM-OUT-46864 (6 June 44), Arnold to Wolfe; Hist. XX BC, May 1944, pp. 7–8; TC, Kharagpur-Washington, 8 June 1944.

142. T/O&E #1-167, 17 Apr. 1944; Reorganization, p. 12.

143. T/O&E #1-167, Change #1, 3 Aug. 1944; Reorganization, pp. 13–14.

144. CM-OUT-62749 (10 July 44), Arnold to Saunders; TC-E-203, Kharagpur-Washington, 1 Aug. 1944; TC-Y-228, Kharagpur-Washington, 7 Aug. 1944; TC-5-2, Washington-Kharagpur, 5 Aug. 1944; TC-14-4, Washington-Kharagpur, 14 Aug. 1944.

145. TC-E-478, Kharagpur-Washington, 13 Sept. 1944; TC-E-516, Kharagpur-Washington, 20 Sept. 1944.

146. TC-20-9, Washington-Kharagpur, 20 Sept. 1944.

147. Reorganization, pp. 14–15; Hist. XX BC, Aug. 1944, p. 21.

148. Functional Organization of a VLR Bombardment Group Base, 10 Oct. 1944.

149. Per cent of B-29's in Commission Time, in XX BC Digest of Opns., 30 Nov. 1944. The percentage rose from 40 in June to 57 in October and November.

150. TC-A-130, Kharagpur-Washington, 12 July 1944; TC, Washington-Kharagpur, 15 July 1944; Amalgamation of the 58th Bomb. Wg. Personnel into XX BC, 14 July 1944; XX BC SO 97, 13 July 1944.

151. Functional Orgn. of XX BC, 6 Aug. 1944; Reorganization, pp. 40–42; Hist. XX BC, Aug. 1944, p. 21; see also Functional Charts for Staff Sections, dtd. 3 Sept. 1944, in Reorganization, supporting documents.

152. Reorganization, pp. 42–43.

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153. *Ibid.*, pp. 43–46; XX BC Digest of Opns., 30 Nov. 1944.

154. TC-A-506, Kharagpur-Washington, 18 Sept. 1944.

155. TC-Y-950, Kharagpur-Washington, 2 Nov. 1944.

156. TC, Kharagpur-Washington, 29 June 1944.

157. CM-OUT-68054 (20 July 44), Arnold to Stratemeyer for Giles.

158. JCS 838, 28 Apr. 1944; CM-OUT-31202 (2 May 44), JCS to Stilwell; CM-IN-5460 (8 May 44), Sultan to Marshall, CRAX 2855, 6 May 1944.

159. TC, Kharagpur-Washington, 29 June 1944.

160. CM-OUT-62749 (10 July 44), Arnold to Saunders.

161. JCS 940, 7 July 1944.

162. JCS 959, 15 July 1944.

163. *Ibid.*; CM-OUT-62749 (10 July 44), Arnold to Saunders.

164. TC, Washington-Kharagpur, 18 July 1944.

165. CM-IN-682 (1 June 44), Wolfe to Arnold, E348L, 1 June 1944; CM-OUT-45384 (2 June 44), Arnold to Wolfe; TC-Y-112, Kharagpur-Washington, 18 July 1944; TC, Washington-Kharagpur, 12 July 1944.

166. TC, Washington-Kharagpur, 11 July 1944; TC-E-138, Kharagpur-Washington, 12 July 1944; TC-E-162, Kharagpur-Washington, 20 July 1944.

167. TC, Washington-Kharagpur, 24 July 1944; CM-IN-1539 (2 Aug. 44), Giles to Arnold, CABX 4039, 2 Aug. 1944.

168. CM-OUT-75308 (3 Aug. 44), Arnold to Saunders; CM-OUT-68054 (20 July 44), Arnold to Stratemeyer for Giles; CM-OUT-71990 (28 July 44), Hansell to Saunders; TC, Washington-Kharagpur, 29 July 1944; TC-4-3, Washington-Kharagpur, 4 Aug. 1944.

169. CM-OUT-78509 (10 Aug. 44), Marshall to Stilwell; CM-OUT-79786 (12 Aug. 44), WD to Chennault; CM-IN-12874 (14 Aug. 44), Stilwell to Marshall, CRAX 10808, 14 Aug. 1944.

170. Memo for Kuter from Maj. D. S. Blossom, 24 Aug. 1944; JCS 940/2 approved informally on 25 Aug. 1944; CM-OUT-87378 (26 Aug. 44), Marshall to Stilwell.

171. CM-OUT-87086 (26 Aug. 44), JCS to Stilwell.

172. TC-2-5, Washington-Kharagpur, 2 Sept. 1944.

173. TC-Q-400, Kharagpur-Washington, 1 Sept. 1944.

174. XX BC, C-109 Prov. Unit, Kalaikunda Army Air Fld., 25 Aug. 1944.

175. Reorganization, pp. 32–33.

176. TC-Q-588, Kharagpur-Washington, 28 Sept. 1944. The figure cited in this message, 4,700 tons, included 1,500 for fighter defense, a net of 3,200.

177. TC-Q-593, Kharagpur-Washington, 29 Sept. 1944.

178. CM-OUT-25837 (5 Sept. 44), Arnold to LeMay; TC-Q-688, Kharagpur-Washington, 29 Sept. 1944; TC-Q-828, Kharagpur-Washington, 19 Oct. 1944.

179. CM-OUT-47475 (16 Oct. 44), Arnold to Sultan; TC-17-10, Washington-Kharagpur, 17 Oct. 1944.

180. TC-9-4, Washington-Kharagpur, 9 Oct. 1944.

181. TC-Q-828, Kharagpur-Washington, 19 Oct. 1944.

182. CM-IN-25905 (27 Oct. 44), LeMay to Arnold, 2459E, 27 Oct. 1944; CM-OUT-54166 (28 Oct. 44), Arnold to LeMay; CM-IN-319 (1 Nov. 44), LeMay to Arnold, 2725E, 31 Oct. 1944.

NOTES TO CHAPTER 5

1. TC-A-479, Kharagpur-Washington, 13 Sept. 1944; TC-14-1, Washington-Kharagpur, 14 Sept. 1944; memo for Kuter from Brig. Gen. R. C. Lindsay, 29 Sept. 1944.

2. Memo for Norstad from Combs, 6 Sept. 1944, with draft message for LeMay (which inaccurately stated that "aircraft production has always been our Number One priority"); TC-13-4, Washington-Kharagpur, 13 Sept. 1944.

3. Revised Rpt. of Committee of Operations Analysts [COA] on Economic Targets in the Far East, 10 Oct. 1944.

4. Rpts. to COA: Economic Effects of Successful Area Attacks, 4 Sept. 1944; Target Systems in the Japanese Aircraft Industry, Sept. 1944.

5. Revised Rpt. COA, Pt. II, paras. 1 and 2.

6. JCS 152d Mtg., 12 Mar. 1944.

7. JCS 751/3, 4 Apr. 1944.

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8. JCS 838, 28 Apr. 1944; CM-OUT-31202 (2 May 44), JCS to Stilwell.

9. CM-IN-5460 (8 May 44), Sultan to Marshall; CM-OUT-34129 (9 May 44), Arnold to Wolfe.

10. CM-OUT-87086 (26 Aug. 44), JCS to Stilwell.

11. TC-4-3, Washington-Kharagpur, 4 Sept. 1944; CM-IN-4805 (6 Sept. 44), LeMay to Norstad; TC-7-6, Norstad to LeMay, 7 Sept. 1944.

12. CCS 417/8, 9 Sept. 1944.

13. W. F. Halsey and J. Bryan III, *Admiral Halsey's Story* (New York, 1947), pp. 195–98.

14. *Ibid.*, p. 199; G. C. Kenney, *General Kenney Reports* (New York, 1949) pp. 431–32.

15. *Halsey's Story*, p. 200; Marshall's Third Report in *The War Reports of . . . Marshall . . . Arnold . . . King* (Philadelphia, 1947), pp. 227–28.

16. TC-23-5, Washington-Kharagpur, 23 Sept. 1944; TC-Q-543, Kharagpur-Washington, 25 Sept. 1944; TC-28-5, Washington-Kharagpur, 28 Sept. 1944; TC-Q-593, Kharagpur-Washington, 29 Sept. 1944; TC-29-5 and TC-29-8, Washington-Kharagpur, 29 Sept. 1944; TC-Q-607, Kharagpur-Washington, 30 Sept. 1944.

17. CM-OUT-34928 (22 Sept. 44), JCS to Stilwell, Nimitz, MacArthur.

18. CM-IN-22850 (24 Sept. 44), MacArthur to WD; CM-IN-25095 (26 Sept. 44), MacArthur to WD; CM-IN-24702 (26 Sept. 44), Chennault to WD; CM-IN-22806 (24 Sept. 44), Sultan to WD.

19. CM-IN-20707 (22 Sept. 44), CINCPOA to COMINCH.

20. Ser. 290359, CINCPOA to DC 20th AF, 29 Sept. 1944; TC-A-613, Kharagpur-Washington, 2 Oct. 1944; TC-3-3, Washington-Kharagpur, 2 Oct. 1944; ser. 020035, CINCPOA to CG USAF CBI, 2 Oct. 1944; ser. 022146, CINCPOA to DC 20th AF, 2 Oct. 1944; TC-635, Kharagpur-Washington, 3 Oct. 1944; ser. 040305, CINCPOA to DC 20th AF, 4 Oct. 1944; CM-OUT-40740 (3 Oct. 44), Arnold to CINCPOA; TC-J-644, Kharagpur-Washington; TC-E-659, Kharagpur-Washington, 6 Oct. 1944; TC-J-665, Kharagpur-Washington, 7 Oct. 1944; TC-G-695, Kharagpur-Washington, 10 Oct. 1944; ser. 100927, CINCPOA to DC 20th AF, 10 Oct. 1944; TC-11-8, Washington-Kharagpur, 11 Oct. 1944.

21. CM-OUT-38830 (29 Oct. 44), JCS to Stilwell, etc.

22. *Halsey's Story*, p. 205.

23. TMR #10, 14 Oct. 1944 (28 Oct. 44), pp. 1–2.

24. *Ibid.*, pp. 3–6 and Annexes A and K.

25. *Ibid.*, pp. 6–8, Annexes B, C, D.

26. TC-14-8, Washington-Kharagpur, 14 Oct. 1944; ser. 140126, CINCPAC to DC 20th AF, 14 Oct. 1944; TC-15-1, TC-15-5, TC-15-10, Washington-Kharagpur, 15 Oct. 1944; TMR's #11 and #12, 16 and 17 Oct. 1944 (28 Oct. 44), pp. 1–3.

27. TMR's #11 and #12, pp. 5–9.

28. *Ibid.*, pp. 15–16 and Annex M.

29. Answers to AFSHO Questionnaire obtained by Lt. Roger Pineau, USNR, Tokyo, 11 Oct. 1949.

30. TC-11-8, Washington-Kharagpur, 11 Oct. 1944.

31. TC-E-738, Kharagpur-Washington, 14 Oct. 1944; TC-Q-827, Kharagpur-Washington, 19 Oct. 1944.

32. TMR #13, 25 Oct. 1944 (4 Nov. 44).

33. TC-Q-942, Kharagpur-Washington, 1 Nov. 1944; TC-1-5, Washington-Kharagpur, 1 Nov. 1944.

34. TMR #16, 11 Nov. 1944 (11 Nov. 44).

35. *Ibid.*, Annex L.

36. TC-16-3, Saipan-Washington, 16 Oct. 1944; CM-OUT-50166 (21 Oct. 44), Arnold to Hansell; CM-OUT-58062 (5 Nov. 44), Arnold to Hansell; TC-J-967, Kharagpur-Washington, 5 Nov. 1944; TC-05-H, Harmon to Arnold, 5 Nov. 1944; TMR #17, 21 Nov. 1944 (1 Dec. 44), pp. 2–3.

37. TMR #17, pp. 3–6 and Annex L.

38. *Ibid.*, pp. 6–7 and Annex J.

39. Air Estimate and Plans for 20th AF Opns., Dec. 1944 to Jan. 1945 (6 Dec. 44); TMR #19, 7 Dec. 1944 (19 Dec. 44), pp. 1–3.

40. XX BC, FO 19, 5 Dec. 1944; TMR #19, pp. 3–5.

41. TMR #19, pp. 6–7 and Annex C.

42. Chennault, *Way of a Fighter*, p. 295 and see above, p. 104.

43. Chennault, *Way of a Fighter*, p. 295; TC-8-7, Washington-Kharagpur, 8

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Dec. 1944; TC-2-4, Washington-Kharagpur, 12 Dec. 1944; Hist. XX BC, Fifth Phase, pp. 73–75.

44. TMR #21, 18 Dec. 1944 (4 Jan. 45), pp. 1–9 and Annex L; Hist. XX BC, Fifth Phase, pp. 75–90.

45. Chennault, *Way of a Fighter*, p. 330.

46. See above, pp. 132–33 and notes thereto; also, R&R, AC/AS Plans to various AAF agencies, Night B-29 Opns. Against Japan, 12 Feb. 1944, and replies thereto; memo for C/S 20th AF from Maj. Gen. H. A. Craig, 7 June 1944; TC-J-976, Kharagpur-Washington, 5 Nov. 1944; TC-14-4, Washington-Kharagpur, 14 Nov. 1944; TC-R-1092, Kharagpur-Washington, 25 Nov. 1944. There are other confusing statements in Chennault's account. He seems to criticize LeMay for planning to send his planes in an unescorted daylight mission though this normal procedure had never resulted in excessive losses for XX Bomber Command; on this occasion the mission was accomplished without the loss of a single B-29. Chennault also says that in arguing about tactics and bomb load he advocated bombing below 20,000 feet and using all incendiaries but that he and LeMay had compromised on an 80 per cent incendiary, 20 per cent HE load and an altitude of 20,000 feet. Actually only incendiaries were loaded for the mission and though bombing altitudes varied from 18,000 to 23,000 feet, about half the planes bombed from below 20,000 (see TMR #21, Annex A, IV and V).

47. The messages are too numerous to cite *in toto* but see, e.g., CM-IN-9003 (10 Sept. 44), LeMay to ATSC; CM-IN-12417 (14 Sept. 44), LeMay to Button; CM-IN-15208 (16 Sept. 44); CM-IN 2965 (4 Oct. 44), LeMay to Arnold; CM-OUT-43731 (9 Oct. 44), Irvine to LeMay; CM-IN-8431 (9 Oct. 44), Rosenblatt to Arnold; CM-IN-17483 (18 Oct. 44), LeMay to Horton; CM-IN-26019 (27 Oct. 44), LeMay to McMullen; CM-IN-12126 (13 Nov. 44), LeMay to Hackett; CM-IN-27679 (28 Nov. 44), LeMay to Arnold.

48. CM-IN-8431 (9 Oct. 44), Rosenblatt to Arnold; CM-IN-18226 (19 Oct. 44), Rosenblatt to Arnold.

49. CM-IN-8117 (9 Nov. 44), LeMay to Arnold; CM-IN-6184 (6 Dec. 44), LeMay to Arnold.

50. CM-IN-18313 (19 Nov. 44), LeLeMay to WD.

51. TMR #22, 19 Dec. 1944 (9 Jan. 45); Hist. XX BC, Fifth Phase, pp. 57–60.

52. TMR #23, 21 Dec. 1944 (11 Jan. 45); Hist. XX BC, Fifth Phase, pp. 61–64.

53. JCS 713/18, 2 Oct. 1944; JCS 180th Mtg., 3 Oct. 1944.

54. TC-11-25, Washington-Kharagpur, 25 Oct. 1944; TC-A-893, Kharagpur-Washington, 30 Oct. 1944; CM-IN-4769 (5 Nov. 44), MacArthur to WD; ltr., Sherman (POA), Chamberlin (SWPA), Stone (IBT), and Ball (20th AF) to CINCSWPA *et al.;* TC-07-E, Ball to Norstad, 7 Nov. 1944.

55. TC-11-8, Norstad to Ball, 8 Nov. 1944; CM-IN-8772 (9 Nov. 44), CINCPOA to WD; CM-IN-11098 (12 Nov. 44), Wedemeyer to WD; CM-OUT-64579 (17 Nov. 44), Arnold to Harmon; CM-OUT-64114 (17 Nov. 44), Marshall to Wedemeyer.

56. See the extensive correspondence in 20th AF FIVESOME file, especially the following: CM-IN-18735 (19 Nov. 44), MacArthur to WD; CM-IN-21749 and 22219 (21 Nov. 44), Wedemeyer to WD; TC-J-1085, Kharagpur-Washington, 24 Nov. 1944; CM-OUT-68829 (26 Nov. 44), Arnold to SWPA; CM-IN-25459 (26 Nov. 44), Harmon to Arnold; CM-OUT-68838 (26 Nov. 44), Arnold to LeMay; TC-J-1106, Kharagpur-Washington, 27 Nov. 1944; CM-IN-27595 (27 Nov. 44), CINCPOA to WD; CM-IN-27641 and 27954 (28 Nov. 44), MacArthur to WD. See also TC-K-11-1, Washington-Kharagpur, 11 Dec. 1944; CM-OUT-75991 (11 Dec. 44), Arnold to LeMay; TC-K-12-4, Washington-Kharagpur, 12 Dec. 1944; CM-IN-12656 (13 Dec. 44), LeMay to Arnold; CM-OUT-77678 (15 Dec. 44), JCS to Wedemeyer; CM-OUT-79536 (19 Dec. 44), Arnold to LeMay and Harmon; TC-E-1251, Kharagpur-Washington and TC-H-19-6, Washington-Kharagpur, 19 Dec. 1944; CM-OUT-84938 (31 Dec. 44), Arnold to LeMay; TMR #25, 6 Jan. 1945 (26 Jan. 45), pp. 1–3.

57. TMR #25, pp. 3–9.

58. CM-IN-5768 (7 Jan. 45), MacArthur to WD; CM-IN-5909 (7 Jan. 45),

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LeMay to Arnold; CM-OUT-88424 (7 Jan. 45), Arnold to MacArthur; CM-IN-8096 (9 Jan. 45), MacArthur to WD; CM-OUT-89317 (9 Jan. 45), Arnold to LeMay; CM-OUT-89316 (9 Jan. 45), Arnold to MacArthur.

59. CM-OUT-89318 (9 Jan. 45), Arnold to Wedemeyer; CM-IN-8989 (10 Jan. 45), Wedemeyer to WD; CM-IN-8761 (10 Jan. 45), LeMay to Arnold; CM-IN-8759 (10 Jan. 45), Wedemeyer to WD; CM-IN-8821 and CM-IN-8934 (10 Jan. 45), Tunner to ATC; CM-IN-9803 (11 Jan. 45), LeMay to Arnold; Hist. XX BC, Jan. 1945, pp. 66–67.

60. TMR #26, 9 Jan. 1945 (28 Jan. 45); Hist. XX BC, Fifth Phase, pp. 92–96.

61. CM-IN-8893 (10 Jan. 45), LeMay to Arnold; TC-14-41, Kharagpur-Washington, 10 Jan. 1945; TMR #28, 14 Jan. 1945 (6 Feb. 45); Hist. XX BC, Fifth Phase, pp. 99–100.

62. TMR #29, 17 Jan. 1945 (9 Feb. 45); Hist. XX BC, Fifth Phase, pp. 101–3.

63. TC-A-479, Kharagpur-Washington, 13 Sept. 1944; TC-14-1, Washington-Kharagpur, 14 Sept. 1944; TC-15-2, Washington-Kharagpur, 15 Sept. 1944; TC-J-499, Kharagpur-Washington, 18 Sept. 1944; TC-20-4, Washington-Kharagpur, 20 Sept. 1944; CAKX 597 (12 Nov. 44), Chennault to Arnold.

64. TC-21-5, Washington-Kharagpur, 21 Nov. 1944; CM-OUT-67901 (27 Nov. 44), Marshall to Sultan; CAB 9576 (28 Nov. 44), Stratemeyer to Merrill; TC-B-1113, Kharagpur-Washington, 29 Nov. 1944; CM-OUT-72469 (4 Dec. 44), Marshall to Sultan; TC-B-1156, Kharagpur-Washington, 7 Dec. 1944.

65. CFBX 28167 (4 Dec. 44), Wedemeyer to Marshall; CSF 4950 (16 Dec. 44), Wedemeyer to Marshall; CM-OUT-77678 (15 Dec. 44), JCS to Wedemeyer.

66. CFBX 21901 (12 Jan. 45), Wedemeyer to Marshall and Arnold.

67. Memo for AC/AS Plans from Col. C. E. Combs, 21 Nov. 1944; JCS 1190, 6 Dec. 1944; JLC 235/1, 16 Dec. 1944; JCS 1190/1, 20 Dec. 1944; JCS 1190/2, 26 Dec. 1944; JCS 1190/4, 15 Jan. 1945; CM-OUT-21782 (16 Jan. 45), JCS to Wedemeyer.

68. Hist. XX BC, Sixth Phase, p. 32; Hist. XX BC, Dec. 1944, pp. 80–81, and Jan. 1945, p. 5; FO (unnumbered) Fwd. Ech. Det., 15 Dec. 1944; XX BC Hq., Evacuation Plan, 20 Jan. 1945; ltrs., CO's of 444th, 468th, 462d Bomb. Gps. (dtd. 26 Jan. 45) and 40th Gp. (dtd. 27 Jan. 45) to CG XX BC.

69. TMR #20, 14 Dec. 1944 (26 Dec. 44), p. 3.

70. TC-E-916, Kharagpur-Washington, 28 Oct. 1944; TC-30-61, Washington-Kharagpur, 30 Oct. 1944; TC-G-959, Kharagpur-Washington, 2 Nov. 1944.

71. TMR #14, 3 Nov. 1944 (13 Nov. 44); Hist. XX BC, Fifth Phase, pp. 106–13.

72. TMR #18, 27 Nov. 1944 (7 Dec. 44); Hist. XX BC, Fifth Phase, pp. 172–77.

73. TMR #20, 14 Dec. 1944 (26 Dec. 44); Hist. XX BC, Fifth Phase, pp. 177–83.

74. TMR #24, 2 Jan. 1945 (12 Jan. 45) (note especially photographs in Annex L); Hist. XX BC, Fifth Phase, pp. 183–86.

75. Hist. XX BC, Fifth Phase, p. 172.

76. CM-OUT-53396 (27 Oct. 44), Arnold to LeMay; TC-2-11, Washington-Kharagpur, 2 Nov. 1944; TC-G-959, Kharagpur-Washington, 2 Nov. 1944; TC-E-961, Kharagpur-Washington, 3 Nov. 1944; TC-E-957, Kharagpur-Washington, 2 Nov. 1944.

77. TMR #15, 5 Nov. 1944 (15 Nov. 44); Hist. XX BC, Fifth Phase, pp. 114–23; CM-IN-1936 (3 Jan. 45), LeMay to Arnold; CM-IN-2429 (3 Jan. 45), MacArthur to WD.

78. TMR #27, 11 Jan. 1945; Hist. XX BC, Fifth Phase, pp. 124–31.

79. TC-FN-19-3, Saipan-Kharagpur, 19 Jan. 1945; Hist. XX BC, Jan. 1945, pp. 5–6; Hist. XX BC, Sixth Phase, pp. 32–33.

80. TMR's #30–#31, 25/26 Jan. 1945 (16 Feb. 45), pp. 1–3; Hist. XX BC, Fifth Phase, pp. 211–15.

81. TMR's #30–#31, pp. 3–6 and Annex L; Hist. XX BC, Fifth Phase, pp. 215–21.

82. TMR #40, 27 Feb. 1945 (19 Mar. 45); Hist XX BC, Fifth Phase, pp. 221–23.

83. TMR #39, 4 Mar. 1945 (18 Mar. 45); Hist. XX BC, Fifth Phase, pp. 223–26.

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84. TMR #46, 28/29 Mar. 1945 (15 Apr. 45); Hist. XX BC, pp. 226–28.

85. TMR's #47–#48, 28/29 Mar. 1945 (18 Apr. 45); Hist. XX BC, Fifth Phase, pp. 228–32.

86. TMR #32, 27 Jan. 1945 (20 Feb. 45); Hist. XX BC, Fifth Phase, pp. 193–95.

87. TMR #33, 1 Feb. 1945 (24 Feb. 45); Hist. XX BC, Fifth Phase, pp. 132–38.

88. TC-3500, Washington-Kharagpur, 1 Feb. 1945, CABX 2542AOO (3 Feb. 45), Stratemeyer to Ramey; msg. J-8715 (3 Feb. 45), Ramey to Arnold; TC-K-3–6, Washington-Kharagpur, 3 Feb. 1945; msg. EAC-736AOX (5 Feb. 45), Stratemeyer to Mountbatten; Hist. XX BC, Fifth Phase, pp. 138–42.

89. TMR #34, 7 Feb. 1945 (1 Mar. 45).

90. TMR #35, 7 Feb. 1945 (3 Mar. 45).

91. TMR #36, 11 Feb. 1945 (8 Mar. 45).

92. TMR #44, 17 Mar. 1945 (2 Apr. 45).

93. TMR #45, 22 Mar. 1945 (8 Apr. 45).

94. TMR #37, 19 Feb. 1945 (10 Mar. 45).

95. TMR #43, 10 Mar. 1945 (31 Mar. 45).

96. TMR #38, 24 Feb. 1945 (13 Mar. 45).

97. TC-3500, Washington-Kharagpur, 1 Feb. 1945; TMR #41, 2 Mar. 1945 (23 Mar. 45).

98. TMR #42, 12 Mar. 1945 (29 Mar. 45).

99. TMR #49, 29–30 Mar. 1945 (13 Apr. 45).

100. XX BC Cumulative Sum. of Opns. Ending 31 Mar. 1945.

101. Hist. XX BC, Fifth Phase, pp. 349–50; CM-OUT-24457 (2 Sept. 44), Arnold to LeMay.

102. CM-IN-12555 (16 June 44), Wolfe to WD; Hist. XX BC, Fifth Phase, pp. 351–53; TC-23–6, Washington-Kharagpur, 23 Sept. 1944; TC-E-546, Kharagpur-Washington, 25 Sept. 1944; TC-27–1, Washington-Kharagpur, 27 Sept. 1944; TC-E-608, Kharagpur-Washington, 30 Sept. 1944; TC-2–3, Washington-Kharagpur, 2 Oct. 1944; TC-D-626, Kharagpur-Washington, 3 Oct. 1944; TC-E-632, Kharagpur-Washington, 3 Oct. 1944; TC-E-1013, Kharagpur-Washington, 11 Nov. 1944.

103. TC-E-617, Kharagpur-Washington, 2 Oct. 1944; TC-6–1, Washington-Kharagpur, 6 Oct. 1944; TC-9–7, Washington-Kharagpur, 9 Nov. 1944; TC-23–11, Washington-Kharagpur, 23 Nov. 1944; Hist. XX BC, Nov. and Dec. 1944; Hist. XX BC, Fifth Phase, p. 354.

104. CM-IN-13837 (14 Dec. 44), Harmon to Arnold; CM-OUT-79537 (19 Dec. 44), Arnold to MacArthur; TC-E-1298, Kharagpur-Washington, 26 Dec. 1944; TC-E-1319, Kharagpur-Washington, 27 Dec. 1944; TC-E-1330, Kharagpur-Washington, 28 Dec. 1944; CM-IN-2244 (3 Jan. 45), LeMay to Arnold; CM-IN-3624 (4 Jan. 45), LeMay to Arnold; CM-IN-3988 (5 Jan. 44), LeMay to Arnold; TC-E-1406, Harmon to Arnold, 7 Jan. 1945; CM-IN-11370 (13 Jan. 45), CINCPOA to Arnold; CM-IN-13087 (14 Jan. 45), LeMay to Arnold; CM-IN-14033 (15 Jan. 45), MacArthur to Arnold; CM-OUT-20948 (14 Jan. 45), Arnold to MacArthur.

105. TC-E-1677, Kharagpur-Washington, 2 Feb. 1945; TC-K-4–2, Washington-Kharagpur, 2 Feb. 1945; TC-H-15–3, Arnold to DC 20th AF, 15 Feb. 1945; CM-OUT-40419 (20 Feb. 45), Arnold to Ramey; CM-IN-23809 (23 Feb. 45), Ramey to Arnold; TC-Q-1825, Kharagpur-Washington, 24 Feb. 1945; TC-K-26–3, Washington-Kharagpur, 26 Feb. 1945; CM-IN-29086 (28 Feb. 45), Wedemeyer to Arnold; TC-E-1870, Kharagpur-Washington, 6 Mar. 1945; CM-OUT-41928 (7 Mar. 45), Arnold to Ramey; TC-E-1894, Kharagpur-Washington, 10 Mar. 1945; CM-IN-12182 (12 Mar. 45), Ramey to Arnold; TC-K-15–1, Washington-Kharagpur, 16 Mar. 1945; Hist. XX BC, Jan., Feb., and Mar. 1945.

106. CM-IN-25662 (20 Jan. 45), Wedemeyer to JCS; CM-IN-4269 (4 Feb. 45), Sultan to WD; CM-OUT-34382 (8 Feb. 45); JCS 1190/5, 6 Feb. 1945; memo for C/AS from Kuter (n.d., but *ca.* 27 Jan. 45).

107. TC-E-2–5, Washington-Kharagpur, 20 Jan. 1945; XX BC GO 14, 6 Feb. 1945; XX BC SO 39, 8 Feb. 1945; Hist. XX BC, p. 6.

108. TC-A-1544, Kharagpur-Washington, 19 Jan. 1945; TC-K-25–8, Washington-Kharagpur, 25 Jan. 1945; TC-K-1–6, Washington-Kharagpur, 1 Feb. 1945; CM-OUT-33285 (6 Feb. 45), JCS to

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Sultan; JCS 1190/6, 13 Feb. 1945. The 2d and 3d Air Transport Sqs. (Mobile) were still assigned to 20th AF for future use but were to be left with ATC's IBD (TC-K-1-2, Washington-Kharagpur, 1 Feb. 1945).

109. TC-K-1-2 and K-1-6, Washington-Kharagpur, 1 Feb. 1945; TC-K-20-2, Washington-Kharagpur, 20 Feb. 1945; TC-Q-1822, Kharagpur-Washington, 25 Feb. 1945; TC-Q-1991, Kharagpur-Washington, 22 Mar. 1945; TC-K-24-7, Washington-Kharagpur, 24 Mar. 1945; Hist. XX BC, Sixth Phase, p. 41; Hist. XX BC, Feb.–May 1945.

110. Memo for AC/AS Plans, 8 Jan. 1945; memo for AC/AS Plans from Combs, 22 Jan. 1945; CM-OUT-23989 (20 Jan. 45), Arnold to XX BC; CM-OUT-77142 (4 May 45), JCS to Smith; JCS 1190 series; JLC 235/4, 17 Mar. 1945; Hist. XX BC, Sixth Phase, pp. 47–48.

111. TC-K-6-9, Washington-Kharagpur, 7 Dec. 1944; TC (unnumbered), Kharagpur-Washington, 26 Dec. 1944; TC-K-28-12, Washington-Kharagpur, 28 Dec. 1944; TC-E-1360, Kharagpur-Washington, 2 Jan. 1945; TC-Y-0401, Kharagpur-Washington, 6 Jan. 1945; ltr., Ramey to CO's of 40th, 444th, 462d, 468th Bomb. Gps., 26 Jan. 1945; XX BC Hq. Memo, 18 Jan. 1945; TC-K-2-3, Washington-Kharagpur, 2 Mar. 1945; Hist. XX BC, Jan.–Mar. 1945.

112. TC-Y-2001, Kharagpur-Washington, 23 Mar. 1945; Hist. XX BC, Sixth Phase, pp. 50–63.

113. Hist. XX BC, Sixth Phase, pp. 63–65; ltr., E. E. Partridge to Smith, 21 June 1945.

114. Hist. Rpt. for the Movement of . . . Hq. and Hq. Sq., XX BC; Hist. Air Ech. XX BC; XX BC GO 46, 18 July 1945; Hist. XX BC, Sixth Phase, pp. 64–81 (quoting many of the pertinent documents).

115. Hist XX BC, Sixth Phase, p. 19.

116. AAF CBI Eval. Bd., Rpt. #1, 15 Sept. 1944, pp. 28–29.

117. USSBS, The Effects of Strategic Bombing on Japan's War Economy, Dec. 1946, p. 37; XX BC Cumulative Sum. of Opns. Ending 31 Mar. 1945.

118. USSBS, Effects of Strat. Bombing on Japan's War Economy, pp. 45–46.

119. USSBS, The Japanese Aircraft Industry, May 1947, p. 114.

120. USSBS, Air Opns. in China, Burma, India, World War II, Mar. 1947, p. 89.

121. *Ibid.; Collected Wartime Messages of Generalissimo Chiang Kai-shek, 1937–45* (New York, 1946), II, 788; Hist. XX BC, Sixth Phase, pp. 15–17; memo from Milton D. Graham for Dr. Raymond V. Bowers, 28 Nov. 1951; Chennault, *Way of a Fighter*, pp. 276–78.

122. USSBS, Effects of Strat. Bombing on Japanese Morale, June 1947, pp. 33, 121–23; Replies to Questions Submitted to Japanese Historical Group by Lt. Roger Pineau, USNR, 11 Oct. 1949; CM-OUT 52768 (18 June 44), Bissell to Wolfe.

123. USSBS, Japanese Air Power, July 1946, pp. 21, 46–47, 54–55.

124. Hist. XX BC, Sixth Phase, pp. 11–15.

125. For excellent descriptions of staff work and the development of tactics, see Hist. XX BC, Fifth Phase, Pt. II, Apps. I–VII.

126. USSBS, Sum. Rpt., July 1946, p. 9; *cf.* USSBS, Strat. Air Opns. of VHB, pp. 8–9.

127. USSBS, Sum. Rpt., p. 29.

128. *Ibid.*, p. 8; Chennault, *Way of a Fighter*, pp. 277–79, 284–94, 307.

129. USSBS, Air Opns. in CBI, pp. 88–89.

NOTES TO CHAPTER 6

1. CBI ASC GO 1, 20 Aug. 1943; the CBI ASC (P) was activated by Hq. Rear Ech. USAF CBI GO 21, 20 Aug. 1943.

2. AAF IBS CBI GO 1, 20 Aug. 1943. Gen. Stratemeyer had been in the theater since early August.

3. CBI ASC GO 10, 30 Oct. 1943; amended by CBI ASC GO 14, 22 Nov. 1943. See also CASAC (P) GO 1, 5 Nov. 1943.

4. CBI ASC GO 18, 4 July 1944.

5. CBI ASC GO 13, 19 Nov. 1943.

6. This was by the same act that redesignated the 5308th Air Service Area Command.

7. CBI ASC GO 16, 4 Dec. 1943.

8. CBI ASC GO 13, 11 May 1944.

9. The materials used in this account of the Bangalore factory are taken from

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a report written in the summer of 1945 by the Hist. Sec., Hq. AAF IBT for the Army Hist. Sec. at Hq. USAF, New Delhi. This report constitutes chapter V of the Hist. ASC IBT, 1945, in USAF Hist. Div., Maxwell AFB. At the time of its writing, no attempt was made to document it, because Hq. USAF, New Delhi, did not desire documentation. However, all statements of fact are based upon documents which the AAF IBT Hist. Sec. managed to claim when records were being broken up at Hastings Air Base. These documents are now in the Bangalore files of the USAF Hist. Div.

10. 10th AF GO 69, 21 July 1943.

11. 39th SCU strength reports; a consolidation of these reports is shown in the 1945 ASC (IBT) Hist.

12. ASC IBT G-4 Periodic Rpt., 1 Apr.–30 June 1945, p. 34.

13. Radg., CG AAF IBS to CG AAF, 10 July 1944.

14. Radg., CG USAF CBI to CG AAF, 7 July 1944.

15. Radg., CG AAF IBS to CG AAF, 17 Aug. 1944.

16. These figures were supplied by the Civilian Personnel Officer at Hq. ASC IBT. A compilation of civilian strength from Oct. 1943 through Aug. 1945 appears in the Appendix of the Hist. ASC IBT, 1945, Tables 14, 15, 16, and 17.

17. *Ibid.*, Tables 18, 19, and 20.

18. Ltr., Stratemeyer to Arnold, 17 Dec. 1943.

19. The development of the express rail service in India is detailed in different entries of Hq. CBI ASC, AF Movements Sec., Daily Diary, July 1944–Aug. 1945. See also ltr., CG CBI ASC to CO NASAC, 31 July 1944; ltr., CG CBI ASC to CO 84th Air Depot Gp., 10 Aug. 1944; CBI ASC G-4 Periodic Rpt. for quarter ending 31 Dec. 1944, p. 20.

20. CBI ASC G-4 Periodic Rpt. for quarter ending 31 Dec. 1944, p. 20.

21. ASC IBT G-4 Periodic Rpt., Apr.–June 1945, p. 15.

22. ASC IBT Memo 65–44, 4 Jan. 1945; See also ASC IBT Ltr. 438, 28 Mar. 1945; ASC IBT Memo 70–224, 13 Mar. 1945.

23. ASC IBT Ltr. 008, 28 Mar. 1945; also ASC Ltr. 008, 26 Aug. 1945.

24. ASC IBT G-4 Periodic Rpt., Apr.–June 1945, p. 31.

25. Donald M. Nelson, *Arsenal of Democracy* (New York, 1946), p. 409.

26. Data supplied to the author by 39th SCU in AAF Headquarters, India-Burma Sector.

27. James Phinney Baxter, *Scientists Against Time* (Boston, 1946), p. 199.

28. Memo 463.7 for CG AAF IBS CBI from Hq. USAF, 20 Nov. 1943.

29. Radg., Kunming to Hq. AAF, 13 Feb. 1944; see also radg., Kunming to Hq. AAF, 14 Mar. 1944; radg., Kunming to Hq. AAF, 18 Feb. 1944; ltr., AACS to 14th AF, 23 Mar. 1944; see Hist. CBI ASC, 1944, p. 45 ff., for further references.

30. Ltr., Hq. AAF IBS to CG CBI ASC, 13 May 1944.

31. Hist. CBI ASC, 1944, p. 50 ff.

32. Aviation gasoline stocks and consumption rates for CBI from Nov. 1944 thru Aug. 1945 are in Tables 37, 38, and 39 of Hist. ASC IBT, 1945.

33. Data on aircraft statistics were supplied by the 39th SCU; see tables in Hist. ASC IBT, 1945.

34. Hist. ASC IBT, 1945, p. 418.

35. AAF Tng. Comd., Tng. Intel. Rpt. #2705, Supply Dropping Missions in Burma, 2 Nov. 1944.

36. Hist Rpt., CBI ASC, 1944, pp. 72–83.

37. Statistical data supplied by the 39th SCU.

38. 39th SCU, Stat. Sum., 1 Jan.–30 June 1945, pp. 14–16.

39. *Ibid.*, pp. 11–12.

40. ASC IBT G-4 Periodic Rpt., Apr.–June 1945, p. 21.

41. *Ibid.*, p. 19.

42. Hist. ASC CBI, 1942–1945, pp. 472, 474.

43. Hq. 10th AF Critical Revs., 24 Oct. 1944–17 Apr. 1945.

44. 10th AF Ltr., sub.: Plan for Air Service Command Phase of Operations in China, 1 June 1942.

45. 14th AF GO 13, 19 May 1943.

46. Ltr., Chennault to CG American Army Forces CBI, 18 Mar. 1943.

47. AAF IBT GO 225, 12 Dec. 1944.

48. A detailed account of the movement of these two groups is in the Hist. ASC CBI, 1945, pp. 150–52, 154–57.

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NOTES TO CHAPTER 7

1. Theodore H. White, ed., *The Stilwell Papers* (New York, 1948).
2. Memo for CCS from JCS, 17 Feb. 1944, CCS 452/5.
3. TWX's, Arnold to Stilwell, action Stratemeyer, 16 Mar. 1944, and 14 Apr. 1944; Certificate, Hq. AAF IBS CBI, 20 Mar. 1944, a Pledge of Secrecy signed by all officers attending the conference of 19 Mar. 1944; TWX, Hq. AAF IBS CBI, sgd. Maj. Gen. Laurence S. Kuter, 20 Mar. 1944; TWX, Stratemeyer to Arnold, 27 Mar. 1944; TWX, Arnold to Stratemeyer, 28 Mar. 1944.
4. TWX COSSEA 80, Air Ministry to SAC, 24 Mar. 1944, quoting JSM, Washington.
5. Revised draft of COSSEA 80, 12 Apr. 1944, Hq. SEAC.
6. Msg., Stilwell to Marshall, 24 May 1944.
7. Msg., Marshall to Stilwell, 27 May 1944.
8. Rpt., Lt. Gen. Joseph W. Stilwell to C/S USA, covering 21 May 1942–25 Oct. 1944, p. 120.
9. Msg., Marshall to Stilwell, 27 May 1944.
10. Extracts of ltr. from Theater Observer, forwarded by Col. J. L. Loutzenheiser to Combined and Joint Staff Division, 30 June 1944.
11. Ltr., Arnold to Stratemeyer, 27 Dec. 1943.
12. Rpt. of Subcom. to Study JPS 337/D, 23 Dec. 1943.
13. Draft, ltr., Marshall to Mountbatten, late Dec. 1943. Whether this letter was sent or not has not been determined.
14. This statement is supported by many documents, but more especially by the personal reminiscences of those who participated in the decisions of 1943 and 1944.
15. Interview with Gen. Stratemeyer by Lee Bowen, 11 Jan. 1949.
16. See, e.g., ltr., Stratemeyer to CG's and CO's All Units of Comd., 19 Apr. 1944; memo for CG's and CO's All Units of Comd. from Maj. Gen. Charles B. Stone, III, C/AS Hq. AAF IBT, 1 Feb. 1945; memo for CG's and CO's All Units from Hq. AAF IBT, 4 Apr. 1945; memo for CG's and CO's All Units from Hq. AAF IBS, 16 July 1944; ltr., AG to CG Hq. USAF CBI Rear Ech., 29 Feb. 1944; ltr., AM L. W. Hollinghurst to Stratemeyer, 8 Mar. 1945; ltr., Stratemeyer to Hollinghurst, 18 Mar. 1945; ltr., Hollinghurst to Stratemeyer, 21 Apr. 1945; ltr., Stratemeyer to Hollinghurst, 28 Apr. 1945.
17. Memo for Col. Alvin Luedecke, AC/S Opns., Plans, Tng., and Intel. (OPTI), from Stratemeyer, 13 Apr. 1944.
18. There are many references pertaining to these decisions, such as R&R, Col. Luedecke, AOX to AOO Hq. EAC, 22 Apr. 1944; R&R, Col. S. D. Grubbs, AOO to AOX Hq. EAC, 27 Apr. 1944; R&R, H. T. Alness, AOO to Col. Grubbs, 23 Apr. 1944; memo for AOX from G/Capt. the Earl of Bandon, Dep. Asst. C/S, 28 Apr. 1944; R&R, W/C A. T. Richardson, AOI to AOX, 28 Apr. 1944; R&R, A. W. Williamson, AOP to AOX, 28 Apr. 1944.
19. R&R, G/Capt. the Earl of Bandon to Col. Luedecke, 30 Apr. 1944; Hist. Rpt., AAF IBS CBI, May–June 1944.
20. Extract of Diary, CG TCC, 2 May 1944; msg., Old to Stratemeyer, 5 May 1944.
21. Ltr., Stratemeyer to Old, 9 May 1944.
22. Order abolishing TCC, to Baldwin and Slim from Stratemeyer, 4 June 1944.
23. Rpt., Lt. Gen. Joseph W. Stilwell to C/S USA, 21 May 1942–25 Oct. 1944.
24. Gen. Randall, CG 10th AF Advon, "The Fall of Myitkyina."
25. Msg., Slim to Gifford, 14 June 1944.
26. Msg., Stilwell to Marshall, 22 June 1944.
27. Interrog. Rpt. of Lt. Gen. Tanaka Shinichi, CG Japanese 18th Div.
28. Randall, "The Fall of Myitkyina."
29. *Ibid.*
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51. Msg., Chennault to Stilwell, 20 Apr. 1944; Stilwell to Chennault, 22 Apr. 1944.
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42. See sources in *n* 41.

43. Ltr., Kenney to Whitehead, 3 July 1944; ltr., Whitehead to Kenney, 5 Aug. 1944; ltr., Col. P. C. Ragan, AG FEAF to CG USAFFE, 15 Sept. 1944; Hist. 8th Ftr. Gp., July 1944; msg., CG USASOS to CG Intermediate Depot, 27 Aug. 1944; Hist. 49th Ftr. Gp., July 1944; Hist. 43d Bomb. Gp., July 1944; Hist. 82d Rcn. Sq., July 1944; Hist. V FC, July–Dec. 1944, pp. 148–49; Hist. 5th AF, 15 June 1944—2 Sept. 1945, pp. 83–85.

44. Hist. 475th Ftr. Gp., July 1944, p. 4.

45. Hist. 419th Night Ftr. Sq., Aug. 1944; Hist. 347th Ftr. Gp., Aug.–Sept. 1944; Hist. 18th Ftr. Gp., Aug.–Sept. 1944; Hist. 42d Bomb. Gp., Aug.–Sept. 1944.

46. Hist. 309th Bomb. Wg. (H), 5 Aug. 1943–31 May 1945, pp. 7–9; Hist. 35th Ftr. Gp., 1 Jan. 1943–31 Dec. 1944, pp. 15–21; Hist. 348th Ftr. Gp., July thru Sept. 1944; Hist. Data, 868th Bomb. Sq., Aug. 1944; Hist. 58th Ftr. Gp., July thru Sept. 1944; Hist. 417th Bomb. Gp., Sept. 1944; AAFSWPA Opns. Rpt. #18, 9–15 Sept. 1944.

47. Hist. 5th AF, 15 June 1944–2 Sept. 1945, p. 83; 5th AF GO 409, 6 Aug. 1944; Hist. 90th Bomb. Gp., Aug. 1944; Hist. 22d Bomb Gp., Aug. 1944; Hist. 38th Bomb. Gp., Aug. 1944; AAFSWPA Opns. Rpt. #18, 9–15 Sept. 1944; Hist. 3d ER Sq., Sept. 1944; Hist. 375th TC Gp., Sept. 1944.

48. Ltr., Whitehead to Kenney, 5 Aug. 1944; memo for DC FEASC from Col. B. A. Schriever, C/S FEASC, 20 July 1944; Hist. FEASC, July 1944, pp. 19–21, Sept. 1944, pp. 19–20, Oct. 1944, pp. 18–20; Hist. Rpts., IV ASAC, Aug.–Nov. 1944.

49. Msg. AX-70633, CG FEAF to CG 13th AF, 9 Aug. 1944; ltr., Beebe to CG 5th AF and CG 13th AF, 13 Aug. 1944; ltr., Beebe to CINCSWPA, 13 Aug. 1944, and 1st ind. thereto, Col. B. M. Fitch, AG GHQSWPA to CG AAF-SWPA, 14 Aug. 1944; msg. C-16098, GHQSWPA to CINCPOA, 13 Aug. 1944; Hist. XIII BC, Aug. 1944, pp. 39–41; Hist. 85th Ftr. Wg., Aug. 1944; Hist. 418th Night Ftr. Sq., Aug.–Sept. 1944; Hist. 342d Ftr. Sq., Sept. 1944.

50. Ltr., Kenney to Whitehead, 18 Aug. 1944; GHQSWPA Troop Movement Direc. #172, 25 Aug. 1944; Hist. 310th Bomb. Wg., Sept.–Oct. 1944, p. 10; Hist. FEAF, 15 June 1944–2 Sept. 1945, I, 9.

51. CINCPAC-CINCPOA, Joint Staff Study, STALEMATE II, 14 July 1944.

52. CINCPAC Opns. Plan #6–44, 21 July 1944.

53. Ltrs., Whitehead to Kenney, 8 June 1944; Whitehead to Kenney, 11 June 1944; Kenney to Whitehead, 17 June 1944; Whitehead to Kenney, 22 June 1944; Whitehead to CG FEAF, 25 June

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1944; Kenney to Whitehead, 26 June 1944; Whitehead to CG FEAF, 26 June 1944; Whitehead to Kenney, 28 June 1944; Kenney to Whitehead, 3 July 1944.

54. Msg., CINCPOA to COM3DFLT and CINCSOWESPAC, 071245 July 1944.

55. Ltrs., Kenney to CINCSWPA, 11 July 1944; Col. J. T. Murtha, Jr., AC/AS A-5 5th AF to Cooper, 15 July 1944; Murtha to Cooper, 17 July 1944; GHQ-SWPA, Outline Plan for Occupation of Southwest Morotai, 18 July 1944; ltr., Sutherland to CG AAFSWPA *et al.*, 21 July 1944; msg., GHQSWPA to CG AAFSWPA *et al.*, 21 July 1944.

56. Memo for record by Maj. Gen. S. J. Chamberlin, AC/S G-3 GHQ-SWPA, 28 July 1944.

57. Comdr. Western Pacific TF's., Opns. Plan #14-44, 1 Aug. 1944.

58. GHQSWPA, OI #60, 29 July 1944.

59. TRADEWIND TF FO 1, 22 Aug. 1944.

60. CTF 77 Opns. Plan #8-44, 27 Aug. 1944.

61. Comdr. WPTF, Opns. Plan #14-44, 1 Aug. 1944; AAFSWPA, OI #60, 31 July 1944; 5th AF Plan of Air Operations for Occupation of INTERLUDE Island, 4 Aug. 1944; 5th AF, OI #5, 11 Aug. 1944; 5th AF Ltr. of Instr. #1, 3 Sept. 1944.

62. CINCPAC-CINCPOA, Base Development Plans–Angaur, 7 Aug. 1944 and 26 Oct. 1944.

63. GHQSWPA, OI #60, Annex 7 (Engr.), 29 July 1944; msg. CAX-74485, CG AAFSWPA to CG 5th AF, 11 Sept. 1944; AAFSWPA, OI #60, Annex 1 (Tentative Troop List), 31 July 1944; msg. A-0990-A, CG 5th AF to CG FEAF, 17 Aug. 1944; ltr., Whitehead to Kenney, 18 Aug. 1944.

64. AAFSWPA Isums #229, 29 July 1944, pp. 17–19, and #235, 19 Aug. 1944, pp. 16–24.

65. Air Evaluation Board [AEB], SWPA Rpt. #4, 1 Dec. 1944, pp. 5–10; 5th AF Monthly Stat. Sum., Aug. 1944.

66. Ltr., Whitehead to Kenney, 24 July 1944; NMR FFO 223-C-5, 403d Bomb. Sq., 12 Aug. 1944.

67. 5th AF Monthly Stat. Sum., Aug. 1944; Form 34's, 380th Bomb. Gp., Aug. 1944; 5th AF Wkly. Intel. Rev. #40, 27 Aug.–2 Sept. 1944, Annex G; V FC, A-2 Periodic Rpts. #514, 17 Aug. 1944, p. 2, and #515, 18 Aug. 1944, p. 1.

68. 5th AF Monthly Stat. Sum., Aug. 1944; AEB SWPA Rpt. #4, 1 Dec. 1944, Exhibit 9; AAFSWPA Opns. Rpt. #12-14, 29 July–18 Aug. 1944.

69. Hist. XIII BC, Aug. 1944, p. 2; AEB SWPA Rpt. #4, 1 Dec. 1944, pp. 11–12; AAFSWPA Isum #235, 19 Aug. 1944, pp. 28–36; AAFSWPA Objective Folder #72, Palau Islands, 15 Aug. 1944; Hist. 868th Bomb. Sq., Aug. and Sept. 1944.

70. Hist. XIII BC, Aug. 1944, pp. 46–47.

71. AEB SWPA Rpt. #4, 1 Dec. 1944, pp. 11–16; XIII BC, Sum. of Palau Islands Opns., 25 Aug.–5 Sept. 1944, 13 Sept. 1944; AAFSWPA Isum #240, 6 Sept. 1944.

72. Ltr., Whitehead to Kenney, 28 July 1944, in reference to plans for strikes on Mindanao.

73. Msg. A-70037, CG AAFSWPA to CG 5th AF, 2 Aug. 1944; ltr., Kenney to Whitehead, 1 Aug. 1944; Hist. 63d Bomb. Sq., Aug. 1944; 5th AF Wkly. Intel. Rev. #37, 6–12 Aug. 1944, p. 3; AAF-SWPA Intel. Memo #41-44, 8 Feb. 1945; V BC, A-2 Periodic Rpt. #233, 20 Aug. 1944, p. 2.

74. V BC, A-2 Periodic Rpt. #234, 21 Aug. 1944, p. 17; 5th AF Wkly. Intel. Rev. #39, 20–26 Aug. 1944, p. 12; AAF-SWPA Isums #236, 23 Aug. 1944, p. 1; #237, 26 Aug. 1944, p. 30; #239, 2 Sept. 1944, p. 14; and #242, 21 Sept. 1944, sec. vi, pp. 1–19.

75. Ltr., Kenney to Whitehead, 21 Aug. 1944.

76. Ltr., Whitehead to Kenney, 25 Aug. 1944; msg. A-72619, Kenney to CG 5th AF, 29 Aug. 1944; ltr., Kenney to Whitehead, 29 Aug. 1944.

77. Ltr., Cooper to All 5th AF CO's, 6 Sept. 1944; Hist. 475th Ftr. Gp., Sept. 1944, p. 8.

78. 5th AF FFO 245, 1 Sept. 1944; V FC, A-2 Periodic Rpt. #529, 1 Sept. 1944, p. 5; V BC, A-2 Periodic Rpt. #245, 1 Sept. 1944, pp. 1–2, 4, 11–18; 5th AF COIR, 2 Sept. 1944; V BC, A-2 Periodic Rpt. #246, 2 Sept. 1944, pp. 13–19; V FC, A-2 Periodic Rpt. #530, 2 Sept. 1944, p. 1; ltr., Kenney to Whitehead, 21 Aug.

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1944; Hist. 345th Bomb. Gp., Sept. 1944, p. 2; V BC, A-2 Periodic Rpt. #247, 3 Sept. 1944, p. 2.

79. V BC, A-2 Periodic Rpt. #250, 6 Sept. 1944, pp. 1–2; V FC, A-2 Periodic Rpt. #534, 6 Sept. 1944; 13th Air TF Daily Intel. Sum., 6–7 Sept. 1944, p. 1; 5th AF Monthly Stat. Sum., Aug. and Sept. 1944; msg. S-0930-A, CG 5th AF to CG FEAF, 7 Sept. 1944.

80. AAFSWPA Isums #234, 16 Aug. 1944, pp. 17–18; #236, 23 Aug. 1944, pp. 15–16; #237, 26 Aug. 1944, pp. 25–29; #238, 30 Aug. 1944, pp. 19–23; #240, 6 Sept. 1944, pp. 6, 9–12.

81. V BC, A-2 Periodic Rpts. #236, 23 Aug. 1944, p. 3; #237, 24 Aug. 1944, pp. 3, 22–24; and #238, 25 Aug. 1944, p. 6; NMR's FFO-237-A-1, 499th, 500th, 501st Bomb. Sqs., 24 Aug. 1944; USSBS Memo #Nav-11, 16 Oct. 1945, p. 11.

82. V BC, A-2 Periodic Rpt. #246, 2 Sept. 1944, pp. 5, 19–21; NMR's FFO-246-A-1, 499th, 500th, 501st Bomb. Sqs., 2 Sept. 1944; V BC, A-2 Periodic Rpts. #247, 3 Sept. 1944, pp. 1–6, and #248, 4 Sept. 1944, pp. 5–6; 13th Air TF Daily Intel. Sum., 4 Sept. 1944, p. 1; V FC, A-2 Periodic Rpt. #531, 3 Sept. 1944, p. 2.

83. V BC, A-2 Periodic Rpts. #249, 5 Sept. 1944, pp. 1–4; #250, 6 Sept. 1944, p. 8; and #251, 7 Sept. 1944, pp. 1–2; 13th Air TF Daily Intel. Sum., 6 Sept. 1944, p. 1; V FC, A-2 Periodic Rpt. #534, 6 Sept. 1944, p. 4, and #535, 7 Sept. 1944, pp. 1–2; 5th AF Wkly. Intel. Rev. #42, 9–16 Sept. 1944, Annex G; 5th AF Monthly Stat. Sum., Aug. and Sept. 1944.

84. 5th AF Monthly Stat. Sum., Sept. 1944; Hist. XIII FC, Sept. 1944, incl. #50; Form 34's, 528th, 529th, 530th, and 531st Bomb. Sqs., 1–10 Sept. 1944; 5th AF Wkly. Intel. Revs. #41, 2–9 Sept. 1944, Annexes E, G, and K, and #42, 9–16 Sept. 1944, Annexes E, G, and K; AEB SWPA Rpt. #4, 1 Dec. 1944, Exhibit #9, Annex B.

85. Hist. XIII BC, Sept. 1944, pp. 8–9, 68–72; AEB SWPA Rpt. #4, pp. 5–10; 5th AF Monthly Stat. Sum., Sept. 1944; V BC, A-2 Periodic Rpt. #259, 15 Sept. 1944; Form 34, 823d Bomb. Sq., 11–20 Sept. 1944.

86. Ltr., Sutherland to Streett, 21 Sept. 1944, quoting ltr., Carney to Sutherland.

87. Rpts., COM3DFLT to COMINCH, 14 Nov. 1944 and 25 Jan. 1945.

88. Msg., COM3DFLT to CINCPOA, CINCSWPA, COMINCH, 130230 Sept. 1944; msg., COM3DFLT to CINCPOA, 130300 Sept. 1944; msg. OCTAGON 31a, JCS to MacArthur and Nimitz, 15 Sept. 1944.

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90. Rpt., CTF 31 to CINCPOA, 11 Nov. 1944; rpt., COM3DFLT to COMINCH, 14 Nov. 1944. The AAF observer at Peleliu was Brig. Gen. Martin F. Scanlon, Chief, AEB POA. See AEB POA Rpt. #2, Pt. 1, The Assault on Peleliu and Angaur, 12 Sept. 1944–30 Sept. 1944, pp. 5–18.

91. Rpt., COM3DFLT to COMINCH, 14 Nov. 1944.

92. AEB POA Rpt. #2, Pt. 1, pp. 10–12; ltr., Engr., III Marine Amph. Corps to CG III Marine Amph. Corps, 25 Oct. 1944.

93. Hist. AGF, APO 264, n.d.; Hist. 1884th Engr. Avn. Bn., Aug. and Sept. 1944; Hist. 1887th Engr. Avn. Bn., Aug.–Sept. 1944; ltr., Engr., III Marine Amph. Corps to CG III Marine Amph. Corps, 25 Oct. 1944.

94. Air Task Organization in the POA, Vol. II, sec. 5, Pt. 1, pp. 39–43, 46–47, 49–50; Hist. 494th Bomb. Gp., Sept. thru Nov. 1944.

95. Rpt., Rear Adm. D. E. Barbey, CTF 77 to COMINCH, 3 Oct. 1944; 6th Army, Rpt. on the Morotai Opn., 16 Feb. 1945, pp. 13–26.

96. Msg., COM7THFLT to COM3D-FLT, 160545Z Sept. 1944; msg. S-0851-E, CG 5th AF to CG 310th Bomb. Wg., 25 Sept. 1944; Air Task Orgn. in POA, Vol. II, sec. 3, Pt. 1, pp. 13–14.

97. 931st Engr. Avn. Regt., Hist. Rpt. of Morotai Opns. Ending 4 Oct. 1944, n.d.; Hist. 1876th Engr. Avn. Bn., 1 Jan. 1944–31 Dec. 1944, pp. 8–9; Hist. 836th Engr. Avn. Bn., Morotai Opn., 13 Oct. 1944; Hist. 841st Engr. Avn. Bn., 24 Aug. 1944–4 Oct. 1944; memo for Whitehead from [Brig. Gen. D. R.] Hutch[inson], 19 Sept. 1944; msg. S-59, CG 310th Bomb. Wg. to CG 5th AF, 26 Sept. 1944; ltr., Lt. Col. H. G. Woodbury, Engr., 310th

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98. AAFSWPA, A-4 Blue Book #18, 21 Oct. 1944, pp. 48–50; Hist. 13th AF, July 1944–Sept. 1944, Logistics Sec., pp. 13–14; Hist. 35th Ftr. Gp., 1 Jan. 1943–31 Dec. 1944, p. 18; Hist. 310th Bomb. Wg., 1 Sept. 1944–31 Oct. 1944, pp. 27–29.

99. Hist. 35th Ftr. Sq., Oct. 1944; msg. O-197-E, CG 310th Bomb. Wg. to CG V FC, 4 Oct. 1944; Hist. 418th Night Ftr. Sq., Oct. 1944, p. 1; msg. CX-18738, GHQSWPA to CG AAFSWPA *et al.*, 2 Oct. 1944; Hist. 36th Ftr. Sq., Oct. 1944; Hist. 80th Ftr. Sq., Oct. 1944; msg. O-2147-E, CG 5th AF to CG 13th AF, 7 Oct. 1944; 5th AF GO 446, 16 Oct. 1944; Hist. 40th Ftr. Sq., 1 Feb. 1944–31 Dec. 1944, incl. 3, p. 3; Hist. 41st Ftr. Sq., Oct. 1944, pp. 6–8; msg. O-577-A, CG 310th Bomb. Wg. to CG 5th AF, 17 Oct. 1944; ltr., Murtha to Hutchinson, 18 Oct. 1944.

100. Allied Translator and Interpreter Section (ATIS), SWPA, Enemy Publications #338, 27 Mar. 1945, pp. 3, 8; ATIS, GHQ, Supreme Comdr. Allied Powers (SCAP) Doc. #16638B, Japanese Naval War Diary, 1 Apr. 1944–2 Sept. 1945, p. 8; USSBS Interrog. #113, Capt. M. Fuchida, IJN, 10 Oct. 1945; USSBS Interrog. #249, Col. M. Matsumae, 27 Oct.–1 Nov. 1945; 6th Army Rpt. on the Morotai Opn., 16 Feb. 1945, pp. 20–21.

101. Rpt., COM3DFLT to COMINCH, 14 Nov. 1944, p. 6; FEAF, 2d and 3d OAS Rpt. #42, Air Defense of Morotai, 22 July 1945.

102. AEB SWPA Rpt. #5, Balikpapan Raids, 10 Jan. 1945, pp. 7–12.

103. Ltr., Kenney to Arnold, 29 Oct. 1943.

104. *Ibid.;* ltr., Giles to Kenney, 18 Nov. 1943.

105. Msg., CINCSOWESPAC to COMINCH (Nimitz to King), 260833 Mar. 1944; msg. C-10100, CINCSWPA to WD, 26 Mar. 1944.

106. Msg. A-70791, CG FEAF to WD (Giles to Arnold), 11 Aug. 1944.

107. CM-OUT-79125 (11 Aug. 44), WD to CINCSWPA (Arnold to Giles), 11 Aug. 1944; CM-IN-7066 (8 Sept. 44), Rear Ech. GHQSWPA to WD (Kenney to Arnold), 8 Sept. 1944; CM-OUT-27757 (9 Sept. 44), WAR to CINCSWPA (Arnold to Kenney), 9 Sept. 1944.

108. Msg. S-0424-H, CG 5th AF to Kenney (Streett to Kenney), 21 Aug. 1944; msg., Kenney to CG 13th AF, 22 Aug. 1944; ltr., Whitehead to Kenney, 18 Sept. 1944.

109. Hist. 13th AF, July–Sept. 1944, pp. 8–9; Hist. XIII BC, Sept. 1944, p. 60; 13th AF GO 104, 18 Sept. 1944; msg. K-550, CG 13th AF to CG 13th Air TF, 30 Sept. 1944; 13th AF Ltr. of Instr. #1, 1 Oct. 1944.

110. AEB SWPA Rpt. #5, pp. 7–12; ltr., Maj. Barney Samelstein, Exec., 5th Bomb. Gp. to CG XIII BC, 10 Oct. 1944; ltr., Col. Robert F. Burnham, CO 307th Bomb. Gp. to CG XIII BC, 3 Oct. 1944.

111. FEAF, 2d and 3d OAS Memo Rpt., Bomb Selection and Amount of Bombing Effort Required for Attacks against Balikpapan and Tarakan, 5 Oct. 1944; AEB SWPA Rpt. #5, pp. 7–12.

112. Advon XIII BC FO 158A, 29 Sept. 1944; NMR #5-381, 5th Bomb. Gp., 2 Oct. 1944; NMR #307–337, 307th Bomb. Gp., 2 Oct. 1944; ltr., Capt. W. J. DeJarnatt, Intel. Off., 90th Bomb. Gp., to A-2 13th AF, 30 Sept. 1944; NMR #274-X, 319th Bomb. Sq., 1 Oct. 1944, 320th Bomb. Sq., 30 Sept. 1944, 321st Bomb. Sq., 1 Oct. 1944, 400th Bomb. Sq., 1 Oct. 1944; USSBS, Japanese Air Power, p. 20.

113. Advon XIII BC FO's 160, 1 Oct. 1944, and 161, 2 Oct. 1944; NMR's #5–382, 5th Bomb. Gp., 3 Oct. 1944; #307–338, 307th Bomb. Gp., 3 Oct. 1944.

114. Ltr., Burnham to CG XIII BC, 10 Oct. 1944; ltr., Col. T. C. Musgrave, CO 5th Bomb. Gp. to CG XIII BC, 9 Oct. 1944; ltr., Kenney to Giles, 12 Jan. 1945; AEB SWPA Rpt. #5, pp. 20–22; 5th AF FFO 284, 10 Oct. 1944; Advon XIII BC FO 168, 9 Oct. 1944.

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115. Hist. 43d Bomb. Sq., Oct. 1944, pp. 6–7; NMR #868–340, 868th Bomb. Sq., 10 Oct. 1944; NMR #5–383, 5th Bomb. Gp., 11 Oct. 1944; NMR #307–339, 307th Bomb. Gp., 12 Oct. 1944; NMR's #284-A-1, 319th, 320th, 321st, and 400th Bomb. Sqs., 12 Oct. 1944; NMR's #284-A-2, 2d Bomb. Sq., 13 Oct. 1944, 19th Bomb. Sq., 10 Oct. 1944, 33d Bomb. Sq., 15 Oct. 1944, 408th Bomb. Sq., 11 Oct. 1944; NMR's #284-A-3, 64th Bomb. Sq., 14 Oct. 1944, 65th Bomb. Sq., 13 Oct. 1944, 403d Bomb. Sq., 14 Oct. 1944; V FC, A-2 Periodic Rpt. #569, 11 Oct. 1944; Hist. 9th Ftr. Sq., Oct. 1944, pp. 1–2; Hist. 41st Ftr. Sq., Oct. 1944, pp. 5–6.

116. 13th AF FO 3, 13 Oct. 1944; Advon XIII BC FO 172, 13 Oct. 1944; Hist. 43d Bomb. Sq., Oct. 1944, pp. 6–7; NMR #868–344, 868th Bomb. Sq., 13 Oct. 1944; NMR #868–346, 868th Bomb. Sq., 14 Oct. 1944; NMR #5–384, 5th Bomb. Gp., 14 Oct. 1944; NMR #307–340, 307th Bomb. Gp., 15 Oct. 1944; NMR's #288-A-8, 2d Bomb. Sq., 16 Oct. 1944, 19th Bomb. Sq., 14 Oct. 1944, 33d Bomb. Sq., 16 Oct. 1944, 408th Bomb. Sq., 15 Oct. 1944; NMR's #288-A-7, 319th, 320th, 321st, and 400th Bomb. Sqs., 16 Oct. 1944 (activities of 64th Bomb. Sq. are covered in V BC, A-2 Periodic Rpt. #289, 15 Oct. 1944, pp. 14–15); Hist. XIII FC, Oct. 1944, pp. 3–4; XIII FC Daily Intel. Sum., 14–15 Oct. 1944; V FC, A-2 Periodic Rpts. #572, 14 Oct. 1944; #573, 15 Oct. 1944; and #574, 16 Oct. 1944; 41st Ftr. Sq., Individual Combat Rpt. of 1st Lt. Robert K. Johnson, 14 Oct. 1944; msg., Kenney to CG 13th AF and CG 5th AF, 141126I Oct. 1944.

117. Advon XIII BC FO 176, 17 Oct. 1944; XIII FC FO 18, 17 Oct. 1944; NMR #5–386, 5th Bomb. Gp., 18 Nov. 1944; NMR #307–344, 307th Bomb. Gp., 19 Oct. 1944; XIII FC Daily Intel. Sum., 18–19 Oct. 1944.

118. V BC, A-2 Periodic Rpt. #291, 17 Oct. 1944, pp. 9–10; AEB SWPA Rpt. #5, Balikpapan Raids, 10 Jan. 1945, pp. 24–28; USSBS, Oil in Japan's War, Feb. 1946, App. to Report of Oil and Chemical Division, p. 77; USSBS Interrog. #66, Rear Adm. K. Morita, IJN, 9 Oct. 1944.

NOTES TO CHAPTER 11

1. Form 34, 405th Bomb. Sq., 11–20 Sept. 1944.

2. AAF Stat. Digest, World War II, p. 41; 20th SCU, FEAF Personnel, June 1945, p. 8.

3. Ltrs., Kenney to Maj. Gen. J. M. Bevans, AC/AS Personnel, 30 Mar. 1944; Arnold to Kenney, 11 Feb. 1944; Kenney to Arnold, 25 Mar. 1944; Arnold to Kenney, 28 Apr. 1944.

4. Ltr., Bevans to Kenney, 25 Apr. 1944. The percentages of replacement were based upon unit equipment strength, not counting the reserve aircraft.

5. Ltr., Prentiss to Whitehead, 9 Mar. 1944.

6. Hist. 342d Ftr. Sq., July 1944.

7. Ltrs., Whitehead to Kenney, 8 June 1944; Whitehead to Kenney, 19 June 1944.

8. Ltr., Kenney to Whitehead, 1 Aug. 1944.

9. Ltrs., Maj. Gen. H. A. Craig, AC/AS OC&R to CG 5th AF, 3 June 1944; Col. P. C. Ragan, AG FEAF (P) to CG AAF, 25 July 1944; R&R, Col. W. F. McKee, DAC/AS OC&R, n.d.; ltr., Giles to Kenney, 23 Sept. 1944; AEB SWPA, AAF Personnel Admin. in SWPA, 6 May 1944, p. 47.

10. Msg., CO 417th Bomb. Gp. to CG 5th AF, 4 Feb. 1945.

11. AEB SWPA, AAF Personnel Admin., p. 47.

12. 20th SCU, FEAF Personnel, May 1945, p. 4, and Aug. 1945, p. 32.

13. Ltrs., Kenney to Giles, n.d.; Giles to Kenney, 23 Sept. 1944.

14. Ltr., Ragan to CG 13th AF, 18 Sept. 1944.

15. AEB SWPA, AAF Morale Factors, 8 May 1946, p. 14.

16. 20th SCU, FEAF Personnel, Aug. 1945, p. 8.

17. Form 34, 65th Bomb. Sq., 1–10 Sept. 1944; 20th SCU, FEAF Personnel, Aug. 1945, p. 5.

18. Hist. A-1 Sec. 13th AF, 13 Jan. 1943–14 June 1944, pp. 6–7.

19. 5th AF Reg. 35–105, 5 Apr. 1944.

20. Hist. 5th AF, 1 Feb.–15 June 1944, p. 31; Hist. 54th TC Wg., Mar. 1944, p.

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10; msg. A-74705, CG FEAF to CG 13th AF, 13 Sept. 1944.

21. AEB SWPA, AAF Morale Factors, p. 14.

22. Ltr., Capt. G. W. McClughan, Asst. AG FEAF to CG USAFFE, 3 Dec. 1944.

23. 20th SCU, FEAF Personnel, July 1945, pp. 44–51.

24. AEB SWPA, AAF Morale Factors, p. 15.

25. AEB SWPA, AAF Personnel Admin., pp. 37–38.

26. Hist. V FC, July–Dec. 1944, pp. 134–38.

27. Ltr., Giles to Kenney, 23 Sept. 1944.

28. Ltr., Kenney to Arnold, 10 Feb. 1945.

29. AEB SWPA, AAF Personnel Admin., pp. 46–58; msg. RTC-4545, FEAF-CRTC to CG FEAF, 14 July 1945.

30. CRTC, Summary and Analysis of Activity in the FEAF CRTC, Jan. 1945; CRTC, Program of Training, 12 Mar. 1945; msg. RTC-1659, FEAF CRTC to CG FEAF, 28 Mar. 1945; msg. A-548, RAAFCOMD to FEAF CRTC, 19 Apr. 1945.

31. Hist. 54th TC Wg., Aug. thru Nov. 1944.

32. Msg. P-8657-A, CG 5th AF Advon to CG 5th AF, 15 Apr. 1944; msg. A-31461, CG AAFSWPA to CG 5th Advon, 15 Apr. 1945.

33. Ltr., Whitehead to Kenney, 19 June 1944; ltr., Kenney to Arnold, 8 June 1944.

34. Ltr., Whitehead to Kenney, 16 June 1944.

35. Msg. W-55122, Arnold to GHQ-SWPA (for Kenney), 23 June 1944; ltr., Whitehead to Kenney, 28 June 1944; msg. FE-129, CG FEAF to CG 5th AF, 1 Sept. 1944; msg. S-0382, CG 5th AF to CG FEAF, 3 Sept. 1944; ltr., Giles to Kenney, 23 Sept. 1944; Hist. V FC, July–Dec. 1944, p. 140; histories 82d T/R Sq., Sept. 1944 thru Jan. 1945, and 110th T/R Sq., Sept. 1944 thru Mar. 1945.

36. Hist. V FC, Jan.–Mar. 1945, pp. 64–65. According to AAF plans, FEAF was to have received its first P-80 jet fighter group on 1 Dec. 1945 and would have completed conversion to jet fighters by June 1946 (msg. W-27833, Arnold to CG FEAF, 8 July 1945).

37. 5th AF Monthly Stat. Sum., Sept. 1944; Form 34, 405th Bomb. Sq., 11–20 Sept. 1944.

38. AEB SWPA, Bombardment Aviation, pp. 32–33.

39. Ltr., Kenney to Giles, 12 Sept. 1944.

40. AAFSWPA Opns. Rpt., 24–30 June 1944.

41. Ltr., Lt. Col. R. H. Ellis, CO 3d Bomb. Gp. to CG V BC, 13 July 1944.

42. R&R, Col. G. A. Hatcher to Chief, Procurement Div., Production Sec., ATSC, 28 Sept. 1944.

43. Ltr., Kenney to Arnold, 26 Sept. 1944.

44. Memo for C/AS AAF from Brig. Gen. Donald Wilson, AC/AS OC&R, 26 Nov. 1944; ltr., Giles to Kenney, 23 Sept. 1944.

45. Msg. A-77219, CG FEAF to WD (Kenney to CG AAF), 15 July 1945; Hist. 3d Bomb. Gp., June thru Aug. 1945.

46. See the excellent Air Proving Ground historical study, Testing of the B-32, Sept. 1944–Oct. 1944, 31 Jan. 1945; *General Kenney Reports*, pp. 531–32.

47. Msg. U-3731-A, CG 5th AF to CG FEAF, 17 June 1945.

48. Hist. 386th Bomb. Sq., May thru Aug. 1945; Testing of the B-32, pp. 138–40.

49. History, Organization, and Functions of the Staff Sections, V BC, sec. I; Hist. 3d ER Sq., 15 Feb. 1944–28 Feb. 1945; Hist. 2d ER Sq., Apr. thru Nov. 1944; Hist. 13th ER Gp., Mar. 1945; Hist. 5276th Rescue Comp. Gp. (P), 24 Sept.–31 Dec. 1944; Hist. 5th ER Gp., Mar. and Apr. 1945; msg. U-66919, MacArthur to AGWAR, 11 Jan 1945; ltr., Kenney to Giles, 12 Jan. 1945; ltr., Giles to Kenney, 6 Feb. 1945; FEAF, 2d and 3d OAS, Memo Rpt.: Effectiveness of Air-Sea Rescue, July 1944–Feb. 1945; ltr., Streett to Kenney, 4 Dec. 1944; ltr., Kenney to Streett, 15 Dec. 1944; msg., Kenney to CG AAF, 16 Dec. 1944; Check Sheet, FEAF A-3 to FEAF A-4, 19 Jan. 1945; AAF Ltr. 150–5, 18 June 1945, p. 18.

50. Msg. U-26420, CG USAFFE to AGWAR, 30 June 1944; memo for Col. W. L. Ritchie, OPD from Maj. Gen.

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R. J. Marshall, Actg. C/S GHQSWPA, 10 Aug. 1944; AAF Stat. Digest, World War II, p. 171; Hist. 54th TC Wg., June 1944, p. 138; CM-OUT-36428, Marshall to MacArthur, 13 May 1944; msg. C-12823, GHQSWPA Rear Ech. to WAR, 23 May 1944; msg. A-33858, GHQ-SWPA to WAR (Kenney to CG AAF), 23 May 1944; telecon WD-TC-492 (25 May 44), Washington-Brisbane, 24 May 1944; msg. A-33929, CG 5th AF to WAR, 25 May 1944.

51. CM-OUT-42984, Marshall to MacArthur, 28 May 1944; ltrs., Kenney to Arnold, 25 Mar. 1944; Arnold to Kenney, 18 Apr. 1944; Ragan to CG FEASC, 27 July 1944; Arnold to Maj. Gen. J. M. Swing, CG 11th Airborne Div., 1 June 1944; Swing to CG 6th Army, 5 July 1944; Beebe to Col. C. D. Eddleman, G-3 6th Army, 1 Aug. 1944; Hist. 54th TC Wg., Aug. 1944, pp. 1–4, 33–35, and Nov. 1944, p. 6; msg. CX-17990, GHQSWPA Advon to WD, 19 Sept. 1944; msg. CX-18853, GHQSWPA to WAR, 3 Oct. 1944.

52. Ltr., Giles to Kenney, 18 June 1944. See also ltrs., Arnold to Stilwell, 5 June 1944; Arnold to Mountbatten, 7 June 1944; Stratemeyer to Arnold, 25 June 1944; Stilwell to Arnold, 26 June 1944; memo for CG AAF from Kuter, 20 June 1944; and Memo Approved by JCS, 3 July 1944.

53. Msg. A-37425, GHQSWPA Rear Ech. to WAR (Kenney to Arnold), 5 July 1944; ltr., Kenney to Giles, 5 July 1944.

54. Msg. A-70428, GHQSWPA to WAR (Giles to Arnold), 7 Aug. 1944; CM-OUT-83971, WD to CINCSWPA, 21 Aug. 1944; ltr., Kuter to Kenney, 6 Sept. 1944; msg. #37, OCTAGON to GHQSWPA, 16 Sept. 1944.

55. Hist. V FC, July–Dec. 1944, pp. 133–34; Hist. 3d Air Commando Gp., May 1944; Hist. 2d Combat Cargo Gp., Nov. 1944; Hist. 54th TC Wg., Nov. 1944, pp. 7, 10–11.

56. AEB SWPA, Bombardment Aviation Data, p. 30; Hist. 498th Bomb. Sq., Aug. 1944.

57. History, Organization . . . , V BC, sec. I, sec. IV, pp. 7–11; ltr., Kenney to Arnold, 24 May 1944; ltr., Arnold to Kenney, 8 June 1944; AEB SWPA, Bombardment Aviation Data, p. 30.

58. History, Organization . . . , V BC, sec. IV, pp. 10–11; AEB SWPA, Bombardment Aviation Data, pp. 32–33; ltrs., Lt. Col. H. S. Ellmore, CO 417th Bomb. Gp. to CG V BC, 24 July 1944; Kenney to Whitehead, 26 July 1944; Whitehead to Kenney, 28 July 1944; AEB SWPA, Aircraft Rockets, 1 Feb. 1945; AAF Stat. Digest, World War II, p. 172.

59. Hist. V FC, Jan.–June 1944, pp. 112–14, and July–Dec. 1944, pp. 134–42; ATSC Case Study: Fighter Airplane Range Extension Program, Pt. 1; ltrs., Kenney to Ritchie, 7 Aug. 1943; Lt. Col. V. H. Albertson, AG V AFSC to CG 5th AF, 23 May 1944; Whitehead to Kenney, 1 June 1944; Whitehead to Kenney, 16 June 1944; Arnold to Kenney, 25 July 1944.

60. Hist. Chem. Sec., 5th AF, 15 June 1944–2 Sept. 1945, pp. 5–7; 5th AF A-3, The Tactical Employment of Napalm by 5th AF, Jan.–Apr. 1945; Hist. XIII FC, Oct. 1944, p. 6.

61. AAF Stat. Digest, World War II, p. 172.

62. *Ibid.*

63. Ltr., Kenney to Arnold, 28 Dec. 1944.

64. Ltr., Giles to Kenney, 14 Jan. 1945.

65. Ltr., Giles to Kenney, 1 Feb. 1945.

66. Check Sheet, FEAF A-4 to FEAF A-3, 8 Feb. 1945.

67. Msg. POATSC-5768, Oakland to Arnold (info. Kenney), 1 Mar. 1945; Hist. FEASC, Feb. 1945, p. 56.

68. Msg. W-24998, Arnold to CINC-SWPA (for Kenney), 23 Jan. 1945; msg. #1352, CG AFPOA to CG FEAF, 25 Jan. 1945; msg. #3795, CG AFPOA to CG FEAF, 6 Mar. 1945.

69. Msg. W-25513, Arnold to Kenney, 24 Jan. 1945.

70. Ltr., Giles to Kenney, 1 Feb. 1945.

71. Hist. FEASC, Jan. 1945, p. 41; msg. XY-481, CG FEASC to CG FEAF, 8 Jan. 1945.

72. Msg. W-54660, Arnold to GHQ-SWPA, 17 Mar. 1945.

73. Hist. FEASC, Mar. 1945, pp. 5–6, Apr. 1945, p. 14, and May 1945, p. 15.

74. Hist. FEASC, May 1945, pp. 12–15.

75. *General Kenney Reports,* p. 435; Hist. FEASC, Oct. 1944, p. 1. McMullen had been Chief, Maintenance Div., ASC,

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from Dec. 1942 to June 1944, CG ASC from June to Sept. 1944, and CG, Supply and Maintenance Sec., ATSC, from Sept. to 5 Oct. 1944.

76. Memo for CG FEAF from McMullen, 23 Dec. 1944.

77. Msg., McMullen to CO ADFE-ASC, 12 Dec. 1944.

78. See, e.g., Check Sheet, Brig. Gen. R. E. Beebe, C/S FEAF to FEAF A-4, 2 Jan. 1945.

79. Ltr., Kenney to CG FEASC, 15 Jan. 1945; Hist. Directorate of Air Transport and 322d TC Wg.

80. Ltr., Col. W. H. Hardy, FEAF A-4 to Col. Hudnell, 5th AF A-4, 6 Apr. 1945; ltr., Hardy to Lt. Col. J. H. Hicks, Chief, Supply Div., FEASC, 19 Apr. 1945; AEB SWPA, AF Supply System Data, 28 Oct. 1946, p. 43.

81. Check Sheet, Hardy to Hicks, 12 Mar. 1945; ltr., Hardy to Hicks, 23 Mar. 1945; ltr., Hardy to Hicks, 19 May 1945.

82. Hist. FEASC, Jan. 1945, pp. 1–6, 9–10, 60–62.

NOTES TO CHAPTER 12

1. Msg., COM3DFLT to CINCPOA, CINCSWPA, COMINCH, 130230 Sept. 1944; msg., COM3DFLT to CINCPOA, 130300 Sept. 1944; COM3DFLT, War Diary, 1–30 Sept. 1944, 24 Oct. 1944, pp. 10–11.

2. Msg., CINCPOA to COM3DFLT, 130747 Sept. 1944; msg., CINCPOA to CINCSWPA, 130813 Sept. 1944.

3. Msg., OCTAGON #24 to GHQ-SWPA, 13 Sept. 1944.

4. Msg., COM3DFLT to COM7TH-FLT, CINCSWPA, CINCPAC, 230428 Sept. 1944.

5. Msg. CX-17697, GHQSWPA to JCS, CINCPOA, 140105 Sept. 1944.

6. Msg., CINCSWPA to CINCPOA, 142359 Sept. 1944.

7. Msg., OCTAGON #31A to MacArthur and Nimitz for action, Halsey for info., 150147 Sept. 1944; msg. CX-17760, GHQSWPA to CG AAFSWPA *et al.*, 15 Sept. 1944; ltrs., Kenney to Whitehead, 16 Sept. 1944 and 17 Sept. 1944.

8. Ltrs., Whitehead to Kenney, 8 June 1944 and 11 June 1944; Kenney to Whitehead, 17 June 1944.

9. Hist. FEAF, I, 111–17.

10. Ltr., Kenney to CINCSWPA, 11 July 1944.

11. Ltr., Kenney to Arnold, 17 Sept. 1944.

12. Ltr., Kenney to Whitehead, 17 Sept. 1944.

13. Ltr., Kenney to Giles, 12 Sept. 1944; ltr., Arnold to Kenney, 2 Oct. 1944.

14. ATIS, Current Translation #148, Doc. #600988, 6 Feb. 1945; USSBS Interrog. #506, Maj. Gen. T. Nishimura, 19–22 Nov. 1945; see also A. Frank Reel, *The Case of General Yamashita* (Chicago, 1949) for a sympathetic portrait of the general's character and difficulties.

15. USSBS Interrog. #506, 19–22 Nov. 1945; AEB SWPA, Leyte, p. 190; 6th Army, G-2 Wkly. Rpt. #65, 22 Nov. 1944, pp. 23–24.

16. 6th Army, G-2 Wkly. Rpt. #65, 22 Nov. 1944, pp. 23–24.

17. Maj. Gen. Yoshiharu Tomochika, C/S 35th Army, True Facts of the Leyte Operation, chap. 1 [hereinafter cited as True Facts]. For the Japanese story of their Leyte campaign see also 8th Army, 10th Info. and Hist. Service, Staff Study of Operations of the Japanese 102d Division on Leyte and Cebu, n.d.; Hist. Sec., G-2 GHQFEC, Japanese Studies in World War II, 14th Area Army Operations on Leyte, Oct. 1946; Hist. Sec., G-2 GHQFEC, Japanese Studies in World War II, 35th Army Operations, 1944–1945. General Tomochika's memoir checks favorably with these other studies (with the exception of some of his comments on units and personalities) and has been used extensively in this chapter.

18. USSBS Interrogs. #249, Col. M. Matsumae, 27–28 Oct. 1945; #193, Comdr. M. Yamaguchi, 26 Oct. 1945; #495, Capt. T. Ohmae, IJN, 6 Dec. 1945; #403, Vice Adm. S. Fukudome, 9 Dec. 1945; #62, Capt. R. Inoguchi, IJN, 15 Oct. 1945; #40, Capt. M. Fuchida, 18 Oct. 1945; AEB SWPA, Leyte, p. 186; USSBS MAD Questionnaire #10; GHQ-SCAP, Resumé of the Situation #1276, 2 Oct. 1945, p. 4.

19. USSBS Interrog. #378, Adm. S. Toyada, 13 Nov. 1945.

20. USSBS, The Campaigns of the Pacific War, pp. 280–81.

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21. Allied Geog. Sec., SWPA, Terrain Handbook #34: Tacloban, 25 Sept. 1944; 6th Army Rpt. of the Leyte Opn., 20 Oct. 1944–25 Dec. 1944, pp. 5–11, 158; AGS SWPA, Terrain Study #84: Leyte Province, 17 Aug. 1944; AEB SWPA, Leyte, pp. 258, 265; Hist. 5th AF Air Engr. Sec., p. 11; memo for Col. S. D. Sturgis, Jr., Engr., 6th Army, from Col. W. J. Ely, 6th Army Planning Gp., APO 500, 10 Aug. 1944.

22. GHQSWPA Staff Study, KING II, 19 Sept. 1944; msg. CX-17760, GHQ-SWPA to CG 6th Army *et al.*, 15 Sept. 1944; GHQSWPA, OI #70, 21 Sept. 1944; 6th Army FO 25, 23 Sept. 1944; 6th Army Rpt. of the Leyte Opn., pp. 17–25.

23. 6th Army, SOP 6th Army Service Comd., 28 Sept. 1944; OCE AFPAC, Engineers of the Southwest Pacific, 1941–1945, I, 203–7; GHQSWPA, OI #70, 21 Sept. 1944; 6th Army FO 25, 23 Sept. 1944; AEB SWPA, Leyte, pp. 266–69; ltr., Col. P. C. Ragan, AG FEAF to CG 6th Army, 4 Oct. 1944.

24. ANFSWPA Opns. Plans #12–44, 25 Sept. 1944, and #13–44, 26 Sept. 1944; rpt., CTF 77 to COMINCH, 31 Jan. 1945, pp. 1–7.

25. CINCPAC-CINCPOA Staff Study, INSURGENT, 20 Aug. 1944; memo for CINCSWPA and CINCPOA from Rear Adm. Forrest Sherman and Maj. Gen. S. J. Chamberlin, 21 Sept. 1944; msg., CINCPOA to CINCSWPA, 240336 Sept. 1944; msg. CX-18333, MacArthur to CINCPOA, 25 Sept. 1944; CINCPAC-CINCPOA Opns. Plan #8–44, 27 Sept. 1944; msg., COM3DFLT to TG's, 3d Flt., 031600 Oct. 1944.

26. Msg. CX-19552, GHQSWPA to CINCPOA *et al.*, 15 Oct. 1944; msg. CRAX-14575, CG USAF CBI to WAR, GHQSWPA *et al.*, 23 Sept. 1944; msg. CRAX-15444, CG USAF CBI to Chennault, 1 Oct. 1944; msg. WAR-36341, Arnold to CINCSWPA *et al.*, 25 Sept. 1944; msg. WAR-43146, CG 20th AF to CG XX BC, 7 Oct. 1944.

27. GHQSWPA, OI #70, 21 Sept. 1944; msg., MacArthur to COM3DFLT *et al.*, 301127 Sept. 1944; AAFSWPA, OI #62, 14 Aug. 1944; AAFSWPA, OI #69, 17 Sept. 1944; AAFSWPA, OI #71/1, 4 Oct. 1944.

28. GHQSWPA, OI #70, 21 Sept. 1944; AAFSWPA, OI #71, 24 Sept. 1944; 5th AF, OI #6, 27 Sept. 1944, Annex IV, incl. 1 and Annex IV/1, incl. 2, 1 Oct. 1944; FEASC, Logistics Instr. #71, 2 Oct. 1944; AAFSWPA, OI #71/9, 6 Nov. 1944.

29. Ltr., Whitehead to Kenney, 18 Sept. 1944.

30. 6th Army, G-2 Estimate of the Enemy Situation with Respect to "KING TWO" Operation, 20 Sept. 1944; ANFSWPA Opns. Plan #13–44, 1 Oct. 1944; memo for AC/S G-3 SWPA from Capt. Ray Tarbuck, USN, G-3 Plans Sec., GHQSWPA, 4 Oct. 1944; CTF 38 Opns. Order #11–44, 1 Oct. 1944.

31. AAFSWPA, OI #71, 24 Sept. 1944.

32. AAFSWPA Isum #214, 7 June 1944, p. 32.

33. Hist. FEAF, I, 254–59; Hist. V BC, Sept. and Oct. 1944; Hist. XIII BC, Sept. and Oct. 1944; Hist. V FC, July–Dec. 1944, pp. 34–51; Hist. XIII FC, Sept. and Oct. 1944; USSBS, Answers to MAD Questionnaire, #7.

34. V BC, A-2 Periodic Rpts. #262, 18 Sept. 1944; #269, 25 Sept. 1944; #278, 4 Oct. 1944; and #281, 7 Oct. 1944; 5th AF COIR's 2 and 8 Oct. 1944; 5th AF Wkly. Intel. Rev. #45, 7 Oct. 1944, pp. 3, 5.

35. Rpt., COM3DFLT to COMINCH, 25 Jan. 1945, pp. 6–8; ATIS, SCAP Doc. #16638-B, Full Translation of Japanese Naval War Diary, Vol. III, 16 Apr. 1946; William F. Halsey and J. Bryan III, *Admiral Halsey's Story* (New York, 1947), pp. 202–7; AAFSWPA Isum #247, 29 Oct. 1944, sec. C; msg., CINCPAC to COM3DFLT, 142219 Oct. 1944; msg., CINCPAC to COMFAIRWING ONE, 150136 Oct. 1944; msg., CINCPOA to DC 20th AF, 150651 Oct. 1944; msg., COM3DFLT to COMINCH, 150149 Oct. 1944; msg., COM3DFLT to CINCSWPA *et al.*, 150149 Oct. 1944.

36. Msg., CINCPAC to CINCSWPA, 150341 Oct. 1944; msg. AX-79184, CG AAFSWPA to CG 5th AF, 15 Oct. 1944; msg. O-0905-E, CG 5th AF to CG AAFFSWPA, 15 Oct. 1944; msg. AX-79227, CG AAFSWPA to CG 5th AF, 16 Oct. 1944; msg. O-1222-E, CG 5th AF to V BC *et al.*, 19 Oct. 1944; msg. AX-79336, CG FEAF to CG 13th AF, 17 Oct. 1944; msg., MacArthur to

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COMANFSWPA *et al.*, 17 Oct. 1944; msg. O-0933-E, CG 5th AF to CO 310th Bomb. Wg., 16 Oct. 1944.

37. V FC, A-2 Periodic Rpts. #574, 16 Oct. 1944 and #575, 17 Oct. 1944; V BC, A-2 Periodic Rpt. #291, 17 Oct. 1944; 310th Bomb. Wg., COIR's, 17–20 Oct. 1944; Hist. V BC, Oct. 1944, pp. 13–14.

38. Rpt., COM3DFLT to COMINCH, 25 Jan. 1945, pp. 7–8; msg., COM3DFLT to CINCPAC *et al.*, 170016 Oct. 1944.

39. USSBS, The Campaigns of the Pacific War, p. 283; CINCPAC-CINCPOA, Operations in POA during October 1944, pp. 7–19; 20th AF, Stat. Sum. of Opns. Against Japan, p. 68; XX BC, TMR's #10, #11, #12, 14–17 Oct. 1944.

40. Rpt., COM7THFLT to COMINCH, 31 Jan. 1945, pp. 1–12; 6th Army, Rpt. of the Leyte Opns., pp. 26–34.

41. Tomochika, True Facts, pp. 6–7.

42. Ltr., Kenney to Arnold, 14 Nov. 1944.

43. 6th Army, Rpt. of the Leyte Opns., p. 32.

44. Rpt., COM7THFLT to COMINCH, 31 Jan. 1944, pp. 1–12.

45. 6th Army, Rpt. of the Leyte Opns., pp. 34–40, 209; msg., CTF 77 to CINCSWPA, 210945 Oct. 1944; AAFSWPA, Survey of Current Opns. and Cargo Movements #29, 15 Feb. 1945; histories 49th and 475th Ftr. Gps., 421st Night Ftr. Sq., 305th Airdrome Sq., Oct. 1944.

46. Hist. 49th Ftr. Gp., Oct. 1944.

47. USSBS, The Campaigns of the Pacific War, pp. 283–84; James A. Field, Jr., *The Japanese at Leyte Gulf, the Sho Operation* (Princeton, 1947), pp. 23–56; C. Vann Woodward, *The Battle for Leyte Gulf* (New York, 1947), pp. 35, 39–40.

48. Woodward, pp. 23–24; Field, pp. 53–56.

49. Msg., COM3DFLT to CINCSOWESPAC, 190100 Oct. 1944; msg., COM3DFLT to CINCSOWESPAC, 210645 Oct. 1944.

50. Msg., MacArthur to COM3DFLT, 212240 Oct. 1944.

51. Msg., CTF 77 to COM3DFLT *et al.*, 230142 Oct. 1944; Field, pp. 50–51; Woodward, pp. 35–38.

52. Msg., COM3DFLT to CTG 38.1, 180499 Oct. 1944; rpt., COM3DFLT to COMINCH, 25 Jan. 1945, p. 9.

53. Field, pp. 60–72; Woodward, pp. 43–88; rpt., COM3DFLT to COMINCH, 25 Jan. 1945, p. 9.

54. Rpt., COM3DFLT to COMINCH, 25 Jan. 1945, p. 10; *Admiral Halsey's Story*, pp. 215–16; USSBS Interrog. #495, 6 Dec. 1945.

55. *Admiral Halsey's Story*, pp. 216–17; Woodward, pp. 71–80; rpt., CTF 77 to COMINCH, 31 Jan. 1945, p. 14.

56. Msg., COM3DFLT to CINCPAC, 251317 Oct. 1944. This message, representing Halsey's first explanation of his actions, is in WD, OPD Executive Book #23, 26 Oct. 1944.

57. Walter Karig, *et al.*, *Battle Report, The End of An Empire* (New York, 1948), pp. 379–80.

58. Rpt., CTF 77 to COMINCH, 31 Jan. 1945, p. 38.

59. Rpt. CTF 77 to COMINCH, 31 Jan. 1945, pp. 14–18; Woodward, pp. 89–91.

60. Rpt., CFT 77 to COMINCH, 31 Jan. 1945, pp. 18–23; Field, pp. 82–94; Woodward, pp. 92–128.

61. Field, pp. 71–72, 75–77; Woodward, pp. 82, 86–88.

62. Woodward, pp. 163–70, 187.

63. *Ibid.*, pp. 170–72.

64. *Ibid.*, pp. 172–216.

65. Lucien Hubbard, "Hitch-Hiking Through the Philippine Invasion," in AAFSAT Intel. Rpt. #36, Feb. 1945, pp. 31–33.

66. USSBS Interrog. #47, Vice Adm. K. Kurita, 16–17 Oct. 1945; ATIS, SCAP Doc. #16269, 10 Apr. 1946 (and alternate translation of Kurita's reply to this naval questionnaire in Office of Naval Records and History, Dept. of Navy); Field, pp. 122–28.

67. Rpt., CTU 77.4.3 to COMINCH, 29 Oct. 1944.

68. Woodward, pp. 198–99; Karig, p. 422. The comment of Capt. Ray Tarbuck, USN, written aboard the *Blue Ridge* (Admiral Barbey's flagship) during the battle off Samar, is of some interest: "People here feel that the Third Fleet battleships are chasing a secondary force, leaving us at the mercy (of which there is none) of the enemy's main

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body" (rpt., Tarbuck to AC/S G-3 GHQ, 3 Nov. 1944).

69. Ltr., Kenney to Arnold, 14 Nov. 1944.

70. *Admiral Halsey's Story*, p. 219.

71. *Ibid.*, pp. 220–21; Woodward, pp. 129–62.

72. Woodward, pp. 217–35; Field, pp. 131–47.

73. AAFSWPA Opns. Rpt. #24, 21–27 Oct. 1944; 5th AF FFO's #299, 25 Oct. 1944 and #300, 26 Oct. 1944; msg. O-852-E, CO 310th Bomb. Wg. to CG 13th AF, 24 Oct. 1944.

74. 5th AF Wkly. Rev. #48, 22–28 Oct. 1944, Annex E; 310th Bomb. Wg., COIR, 25 Oct. 1944; msg. O-1628-A, CG 5th AF to CO 310th Bomb. Wg., 24 Oct. 1944; Hist. 38th Bomb. Gp., Oct. 1944, pp. 11–12; NMR's, FFO-299-A-1, 2d Bomb. Sq., 26 Oct. 1944; FFO-300-A-3, 2d Bomb. Sq., 28 Oct. 1944; Hist. 72d Bomb. Sq., Oct. 1944; NMR FFO-299-A-3, 403d Bomb. Sq., 27 Oct. 1944. Field (p. 133) identifies the cruiser attacked by B-24's on 25 Oct. as the damaged *Abukuma;* later information, however, identifies the cruiser as the *Kinu*, which was loading troops for Ormoc on 25 Oct. See Answers to AFSHO questionnaire obtained by Lt. Roger Pineau, USNR, in Tokyo, 11 Oct. 1949; also ltr., Naval War College to Hist. Div., 9 Mar. 1951.

75. 5th AF Wkly. Rev. #48, 22–28 Oct. 1944, Annex E; NMR's, FFO-300-A-1, 90th Bomb. Gp., 28 Oct. 1944; FFO-300-A-2, 403d Bomb. Sq., 28 Oct. 1944; FFO-300-A-3, 2d Bomb. Sq., 28 Oct. 1944, and 33d Bomb. Sq., 27 Oct. 1944; Standard Mission Rpt. #5–394, 5th Bomb. Gp., 26 Oct. 1944, and supplement, 28 Oct. 1944; Hist. 33d Bomb. Sq., Oct. 1944, p. 6.

76. Standard Mission Rpt. #307–353D, 307th Bomb. Gp., 27 Oct. 1944; USSBS Interrogs. #170, Comdr. T. Otano, 26 Oct. 1945 and #47, 16–17 Oct. 1945.

77. Combat Narrative Rpt. #349/D, 72d Bomb. Sq., 26 Oct. 1944.

78. XX BC, TMR #15, 15 Nov. 1944; msg. WAR-55364, Arnold to LeMay, 31 Oct. 1944; ltr., Arnold to LeMay, 13 Nov. 1944; Pineau Questionnaire, 11 Oct. 1949.

79. Msg., CTF 77 to CINCSWPA, 251639 Oct. 1944; msg., CTF 77 to COM-3DFLT, 260306 Oct. 1944.

80. Msg. O-26-D, CO 308th Bomb. Wg. to CG 5th AF, 26 Oct. 1944. Col. D. W. Hutchison concluded this report with the observation: "We are slightly embarrassed on having Nip planes occupying traffic patterns around our strip" (rpt., CTF 77 to COMINCH, 31 Jan. 1945, p. 44).

81. Extract from Air Action Sum. 3d Flt., 26 Oct. 1944, quoted in AEB SWPA, Leyte, p. 141.

82. AEB SWPA, Leyte, pp. 141–42; rpt., COM3DFLT to COMINCH, 25 Jan. 1945, p. 12; *Admiral Halsey's Story*, pp. 228–29.

83. Msg. O-10-D, A-2 308th Bomb. Wg. to CG 5th AF, 25 Oct. 1944; msg. O-1788-E, CG 5th AF to CO 308th Bomb. Wg., 26 Oct. 1944; histories 7th and 9th Ftr. Sqs., Oct. 1944.

84. Ltr., Kenney to Arnold, 14 Nov. 1944; msg. CAX-11404, CINCSWPA to COMANFSWPA *et al.*, 27 Oct. 1944; msg. CX-51126, CINCSWPA to COM-3DFLT *et al.*, 27 Oct. 1944.

85. Ltr., Kenney to Arnold, 28 Dec. 1944.

86. AEB SWPA, Leyte, pp. 96–108; Hist. V FC, July–Dec. 1944, pp. 62–72; Hist. 308th Bomb. Wg., 1 Oct.–31 Dec. 1944, pp. 12–13.

87. Hist. 8th Ftr. Sq., Oct. 1944, p. 8; Hist. 421st Night Ftr. Sq., Oct. 1944, p. 4; Hist. V FC, July–Dec. 1944, pp. 73–75.

88. Ltr., Capt. L. T. Iglehart, S-2 7th Ftr. Sq., to A-2 V FC, 31 Oct. 1944; msg. O-2109-A, CG 5th AF to CG FEAF, 30 Oct. 1944; AEB SWPA, Leyte, pp. 306–7.

89. Msg. CTF 77 to CG FEAF, CINCSWPA, CINCPAC, COM7THFLT, CG 5th AF, CG 13th AF, CTG 77.1, CTG 78.2, 010831 Nov. 1944; msg., CTF 77 to CINCPAC, 010821 Nov. 1944; Hist. 432d Ftr. Sq., Nov. 1944, p. 2; msg., Kenney to CTF 77, 3 Nov. 1944; msg., COM-3DFLT to CINCSOWESPAC, 011335 Nov. 1944; msg., CTG 77.1 to CTF 77, 011830Z Nov. 1944; msg. COM3DFLT to CINCSOWESPAC, 020509 Nov. 1944.

90. USSBS, Answers to MAD Questionnaire, #9.

91. Hist. V BC, Oct. 1944, p. 17; Hist. 13th AF, Oct.–Dec. 1944, chap. 3; 13th AF Ltr. of Instr. #7, 28 Oct. 1944; ltrs., Whitehead to CG 13th AF, 29 Oct. 1944; Streett to CG 5th AF, 1 Nov. 1944;

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Streett to Col. W. R. Wolfinbarger, CO XIII FC, 9 Dec. 1944.

92. AEB SWPA, Leyte, pp. 347–48.

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95. Hist. 494th Bomb. Gp., Oct. thru Dec. 1944; Hist. 22d Bomb. Gp., Oct. thru Dec. 144; Hist. V BC, Nov. 1944, p. 15.

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102. 6th Army, Rpt. of the Leyte Opn., pp. 34–40.

103. Tomochika, True Facts, pp. 16–17.

104. ATIS, SCAP Doc. #16946: Translation of Data on Reinforcement and Support of Leyte Island Campaign, 22 Apr. 1946; X Corps AC/S G-3, Interrog. of Maj. Gen. Tomochika, 10–11 Sept. 1945; 6th Army, G-2 Wkly. Rpt. #73, 31 Jan. 1944, pp. 15–20; USSBS Interrog. #159, Comdr. N. Yatsui, 26 Oct. 1945.

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106. Histories 7th, 8th, and 9th Ftr. Sqs., Nov. 1944; Hist. XIII BC, Nov. 1944, pp. 19–20; JANAC, Japanese Naval and Merchant Losses During World War II, Feb. 1947, p. 74. Hereinafter all claims for Japanese shipping sunk are easily verified by reference to JANAC.

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122. Tomochika, True Facts, pp. 23–24.

123. AEB SWPA, Leyte, pp. 172–74; 6th Army, Rpt. of the Leyte Opn., pp. 71–72; Hist. V FC, July–Dec. 1944, pp. 159–62; 6th Army, G-2 Wkly. Rpts. #68, 13 Dec. 1944, pp. 15–16 and #70, 27 Dec. 1944, pp. 35–36; Hist. V AFSC, Dec. 1944, pp. 3–10.

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130. JANAC, p. 19.

131. 6th Army, Rpt. of the Leyte Opn., pp. 72–85.

132. *Ibid.*, p. 184.

133. Tomochika, True Facts, pp. 31–37; X Corps, Interrog. of Maj. Gen. Tomochika, 10–11 Sept. 1945; 8th Army, Rpt. Leyte-Samar Opn., 26 Dec. 1944–8 May 1945, p. 16.

134. 5th AF Monthly Stat. Rpts., Nov. and Dec. 1944; Hist. V FC, July–Dec. 1944, incls. 5, 6.

135. Hist. 3d ER Sq., 15 Feb. 1944–28 Feb. 1945, p. 23. Not all of the 105 men rescued by the squadron during the period were fighter pilots.

136. Ltr., Whitehead to Kenney, 15 Nov. 1944; Hist. 8th Ftr. Gp., Dec. 1944, incl. 1: Gp. Stat. Rpt.

137. V FC Combat Eval. Rpt., 22 Jan. 1945; AEB SWPA, Leyte, p. 109.

138. Draft ltr., USAFFE to TAG, Combat Analysis Sec., 6 Feb. 1945; Check Sheet, A-3 FEAF to G-3 USAFFE, *ca.* 22 Feb. 1945. The grossly unfair report was never released. General Kenney also severely criticized a report of the AEB, POA regarding Leyte, declaring it "of limited value, replete with inaccurate statements and prepared in complete ignorance of what has been accomplished in this theater in the way of combined air and ground force operations" (ltr., Kenney to Giles, 6 Jan. 1945). This AEB report was the work of two AAF observers who went with XXIV Corps for the Yap operation; they attempted the essay on Leyte after less than two days ashore. By reference to reports and hearsay regarding Attu, Kwajalein, Guam, and Cherbourg, the observers left the impression that Navy close support control procedures were excellent, while the AAF furnished "ineffective and undesirable" close support (see AEB POA Rpt. #3: The Occupation of Leyte, Philippine Islands, 15 Nov. 1944).

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140. AEB SWPA, Leyte, pp. 91–93; Hist. 308th Bomb. Wg., 1 Oct.–31 Dec. 1944, p. 22.

141. Hist. V FC, July–Dec. 1944, p. 64.

142. See USSBS Interrog. #231, Maj. Gen. J. Sanada, 2 Nov. 1945; Hist. Sec., G-2 GHQFEC, Japanese Studies in World War II, 35th Army Opns., 1944–45, Record of 35th Army Opns., Leyte Area, p. 46.

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148. 5th AF, OI #6, 27 Sept. 1944, Annex VI.

149. Memo for Sturgis from Ely, 10 Aug. 1944; 5th AF, OI #6, 27 Sept. 1944, Annex VI; 6th Army, G-2 Estimate of the Enemy Situation with Respect to "KING TWO" Operation, 20 Sept. 1944, Annex 3; AGS SWPA, Terrain Handbook #34, pp. 68–71; AEB SWPA, Rpt. #21: Airdrome Neutralization, 17 Apr. 1946, Annex G, pp. 94–96; 6th Army, Rpt. of the Leyte Opn., p. 233; AEB SWPA, Leyte, pp. 261–64; Hist. 308th Bomb. Wg., 1 Oct.–31 Dec. 1944, p. 25.

150. Memo for Sturgis from Ely, 10 Aug. 1944.

151. 6th Army, Rpt. of the Leyte Opn., pp. 232–33; AEB SWPA, Leyte, pp. 266–75, 442–45; OCE GHQ AFPAC, Engineers of the Southwest Pacific, 1941–1945, I, 220–23; FEAF Wkly. General Constr. Rpt., 6 Jan. 1945.

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60. Hist. V FC, July–Dec. 1944, pp. 94–95; AAFSWPA, Opns. Rpt. #33, 30 Dec. 1944–5 Jan. 1945.

61. Hist. 345th Bomb. Gp., Dec. 1944.

62. Msg. D-2059-A, CG 5th AF to 310th Bomb. Wg., 26 Dec. 1944; msg. D-443-A, 310th Bomb. Wg. to CG 5th AF, 30 Dec. 1944; msg. D-464-A, 310th Bomb. Wg. to CG 5th AF, 31 Dec. 1944; msg. D-2542-A, CG 5th AF to 310th Bomb. Wg., 31 Dec. 1944; msg., CTF 73 to *Half Moon*, 310828 Dec. 1944; msg. J-16-E, Comdr. 54th TC Wg. to CG 5th AF, 1 Jan. 1945; Hist. 54th TC Wg., Jan. 1945, pp. 22, 81–82; ltr., Whitehead to Streett, 3 Jan. 1945; msg., CG WVTF to CG 8th Army, 041950 Jan. 1945; msg. J-2735-E, CG 5th AF to CO 91st Photo Wg., 2 Jan. 1945; msg. J-2870-E, CG 5th AF to 310th Bomb. Wg., 3 Jan. 1945.

63. Hist. 310th Bomb. Wg., Nov. 1944–Dec. 1945, pp. 32, 35; Hist. 417th Bomb. Gp., Jan. 1945; NMR #2-E-7, 675th Bomb. Sq., 2 Jan. 1945; FEAF, Daily Intel. Rpts. #115 thru #136, 29 Dec. 1944 thru 19 Jan. 1945; FEAF, 2d and 3d OAS, Luzon Air Opns. during Jan. 1945.

64. Hist. V BC, Jan. 1945, pp. 12–17; Hist. 494th Bomb. Gp., Jan. 1944; Hist. V FC, Jan.–Mar. 1945, pp. 5–8; 5th AF Wkly. Intel. Rev. #58, 31 Dec. 1944–5 Jan. 1945; V BC A-2 Periodic Rpts. #1 thru #6, 1 Jan. thru 6 Jan. 1945; AEB SWPA, Luzon, I, 252.

65. Rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1944, pp. 10–15.

66. Rpt., COM3DFLT to COMINCH, 25 Jan. 1945, pp. 17–19; msg., COM3DFLT to CTF 38 *et al.*, 282150 Dec. 1944; msg., COM3DFLT to CINCPAC, 030555 Jan. 1944; AEB SWPA, Luzon, I, 220–21; msg. CX-55816, MacArthur to COM3DFLT, 4 Jan. 1945; msg., COM3DFLT to CINCSOWESPAC, 052203 Jan. 1945; msg., COM3DFLT to CINCPAC and CINCSWPA, 070920 Jan. 1945.

67. Hist. V BC, Jan. 1945, pp. 16–20; Hist. XIII BC, Jan. 1945, pp. 21–22, 69.

68. Rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, pp. 16–17; rpt., COM3DFLT to COMINCH, 25 Jan. 1945, p. 18; AEB SWPA, Luzon, I, 237.

69. NMR's FFO-7-E-2, 417th Bomb. Gp., 7 Jan. 1945 and FFO-7-A-1, 345th Bomb. Gp., 8–15 Jan. 1945; Hist. 312th Bomb. Gp., Jan. 1945; COIR's, 310th Bomb. Wg., 7 and 8 Jan. 1945; AAFSWPA, Isum #255, 21 Jan. 1945; RAAF Comd., Intel. Sum. #21, 23 June 1945, p. 25; Hist. V BC, Jan. 1945, p. 18; 5th AF, Monthly Stat. Rpt., Jan. 1945.

70. Hist. XIII BC, Jan. 1945, p. 69.

71. Rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, p. 16.

72. USSBS Interrogs. #249, 27–28 Oct. 1945 and #193, 26 Oct. 1945; FEAF, 2d and 3d OAS, Suicide Attacks at Lingayen, January 1945, 24 June 1945.

73. Hist. FEAF, I, 317–18.

74. Quoted in AEB SWPA, Luzon, I, 106–8.

75. Rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, pp. 11–16; 2d and 3d OAS, Suicide Attacks at Lingayen, January 1945. Utilization of the escort carriers for cover and close support at Lingayen had permitted an assessment of their vulnerability under air attack,

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even by a weak enemy air force whose pilots had been briefed to attack Allied transports. The following conclusions of Rear Adm. R. A. Ofstie, COMCARDIV 23, are therefore pertinent:

"(3) It is my firm conviction that the placing upon the escort carriers of the full responsibility for direct air support of the invasion of Luzon, was not in accordance with the known capabilities of these ships. Had direct carrier air support of the landing been of crucial importance, the success of the entire campaign might well have been imperiled. In my view, in an operation of such magnitude and importance where direct carrier air support is essential, and where enemy air attack is a serious threat, only the Fast Carrier Task Forces have offensive and defensive power adequate to the task. . . .

"(5) The combat CVE has proved itself of distinct value in past campaigns; it has a definite place in operations of the future. But that place is not in operations where air attack is a major threat, nor in escort duties when shore based air can better do the job." (See rpt., COMCARDIV 23 to COMINCH, 21 Jan. 1945.)

NOTES TO CHAPTER 14

1. Rpt., Comdr. Luzon Attack Force to COMINCH, pp. 16–17; 6th Army, Rpt. of the Luzon Campaign, I, 16–18; msg., CANFSWPA to TF's and TG's, 7th Flt., 011252 Jan. 1945; msg. J-3372-E, CG 5th AF to CINCSWPA, 8 Jan. 1945; COIR, 310th Bomb. Wg., 9–10 Jan. 1945; NMR FFO-9-A-1, 500th Bomb. Sq., 10 Jan. 1945; Hist. V BC, Jan. 1945, pp. 22–23.

2. Msg. J-1086-A, 310th Bomb. Wg. to CG 5th AF, 11 Jan. 1945; Hist. 82d T/R Sq., Jan. 1945.

3. USSBS Interrogs. #249, 27–28 Oct. 1945, and #503, 9 Dec. 1945; 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. III; 37th Div., Sum. of Interrogs. of General Yamashita and other Responsible Commanders and Staff Officers, n.d.

4. FEAF, 2d and 3d OAS, Luzon Air Opns., Jan. 1945; msg., CTG 77.2 to COM7THFLT, 071536 Jan. 1945; USSBS Interrog. #193, 26 Oct. 1945; msg. CFBX-28167, CG USAF China Theater to WD, 4 Dec. 1944; msg. WARX-68829, Arnold to MacArthur and Nimitz, 26 Nov. 1944; msg., CINCPOA to COMINCH, 272147 Nov. 1944; msg. CX-54055, GHQSWPA Adv. to WD, 28 Nov. 1944; msg. #9985, CG AAFPOA to CG 20th AF, 2 Dec. 1944; msg. WARX-71838, Arnold to DC 20th AF, 3 Dec. 1944; msg. CFBX-29179, Wedemeyer to MacArthur and Nimitz, 15 Dec. 1944; msg., Arnold to LeMay and Hansell, 19 Dec. 1944; msg. WARX-86772, Arnold to MacArthur, 4 Jan. 1945; 14th AF Intel. Sum., 4–10 Jan. 1945, pp. 19–20; 20th AF, A Stat. Sum. of Opns. Against Japan, pp. 68, 85; XX BC TMR #25, 6 Jan. 1944; AAFSWPA Opns. Rpts. #31, 16–22 Dec. 1944, and #33, 30 Dec. 1944–5 Jan. 1945.

5. Rpt., COM3DFLT to COMINCH, 25 Jan. 1945, pp. 19–21.

6. FEAF DIR's #115 thru #136, 29 Dec. 1944 thru 19 Jan. 1945; FEAF, 2d and 3d OAS, Luzon Air Opns., Jan. 1945; msg. J-0039-E, CG 5th AF to 310th Bomb. Wg., 8 Jan. 1945.

7. Msg., CG 6th Army to CINCSWPA *et al.*, 19 Jan. 1945.

8. 6th Army, Rpt. of the Luzon Campaign, I, 18–21.

9. AEB SWPA, Luzon, I, 231–32; rpt., Comdr. ASCU's, 7th Flt., to COM7THFLT, 20 Jan. 1945; COIR, 310th Bomb. Wg., 10 Jan. 1945; msg. J-1013-A, 310th Bomb. Wg. to CTF 77, 10 Jan. 1945; msg., CTF 77 to 310th Bomb. Wg. and CG 5th AF, 110116 Jan. 1945; msg. J-2088-A, 310th Bomb. Wg. to CG 5th AF and CTF 77, 11 Jan. 1945; msg., CTF 77 to CTG 77.4, 010610 Jan. 1945; msg. J-1371-E, 310th Bomb. Wg. to 308th Bomb. Wg., 17 Jan. 1945.

10. Rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, pp. 17, 49; 6th Army, Rpt. of the Luzon Campaign, I, 18–19; msg., CTF 77 to CG 5th AF, 102124 Jan. 1945; OCE GHQ AFPAC, Engineers in Theater Operations, I, 231–37; ltr., Brig. Gen. C. H. Decker, C/S 6th Army to CINCSWPA, 11 Dec. 1944; memo for C/S 6th Army from Eddleman, 13 Dec. 1944; TWX, GHQSWPA to CG 6th Army, 22 Dec. 1944.

11. AEB SWPA, Luzon, I, 313–23; msg. J-0604-E, CG 5th AF to 308th and 310th Bomb. Wgs., 15 Jan. 1945; Hist. 54th TC Wg., Jan. 1945, p. 26; msg. J-

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073-E, 308th Bomb. Wg. to CG 5th AF, 17 Jan. 1945; msg., CTF 77 to CG 6th Army, 170932 Jan. 1945.

12. 6th Army, Rpt. of the Luzon Campaign, IV, 29; Hist. V FC, Jan.–Mar. 1945, pp. 15–16; ltr., Kenney to Whitehead, 31 Jan. 1945; Hist. 309th Bomb. Wg., 1 Jan.–28 May 1945, incl. 2.

13. 6th Army, Rpt. of the Luzon Campaign, I, 1; 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. I.

14. Msg. CAX-50027, MacArthur to CG 6th Army, 17 Jan. 1945; 6th Army, Rpt. of the Luzon Campaign, I, 22–23.

15. AEB SWPA, Luzon, I, 131; 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. IV.

16. 6th Army, Rpt. of the Luzon Campaign, I, 23–28.

17. Msg. WL-62, CG 6th Army to CG 5th AF, 15 Jan. 1945; msg. J-1233-E, CG 5th AF to CG 6th Army, 21 Jan. 1945; V BC A-2 Periodic Rpts. #19 thru #24, 19 Jan. thru 24 Jan. 1945; msg. J-0115-E, CG 5th AF to 310th Bomb. Wg. *et al.*, 9 Jan. 1945; msg. J-229-D, 308th Bomb. Wg. to CG 5th AF, 20 Jan. 1945.

18. 6th Army, Rpt. of the Luzon Campaign, I, 23–27; Hist. 7th Tac. Air Comm. Sq., 1 Jan.–30 Apr. 1945, incl. 3.

19. Msg. J-604-E, A-3 308th Bomb. Wg. to 310th Bomb. Wg., 25 Jan. 1945.

20. Hist. 110th T/R Sq., Jan. 1945, p. 7.

21. 6th Army, Rpt. of the Luzon Campaign, I, 27–28.

22. For the details of this planning see Hist. FEAF, I, 166–75.

23. Ltr., Krueger to CINCSWPA, 29 Dec. 1944; memo for Hist. Off. 5th AF from Lt. Col. J. P. Lee, Plans Off. 5th AF, 6 Oct. 1945. For MIKE VII planning see Hist. FEAF, I, 182–87.

24. Check Sheet, A-5 FEAF to CG FEAF, 12 Jan. 1945; memo for record by A-5 FEAF, 14 Jan. 1945; Hist. FEAF, I, 182–83.

25. For the planning see again Hist. FEAF, I, 176–81.

26. Hist. 5th AF, June 1944–Sept. 1945, pp. 88–90; Hist. XIII FC, Jan. 1945; msg. J-1056-B, CG 5th AF to CG FEAF, 29 Jan. 1945; msg. J-1145-B, CG 5th AF to Comdr. 54th TC Wg. Advon, 30 Jan. 1945.

27. FEAF DIR #140, 23 Jan. 1945, p. B-3; msg., CG AAFSWPA to CINCSWPA, 29 Jan. 1945; memo for G-3 8th Army from Stewart, 23 Jan. 1945; 5th AF Monthly Stat. Rpt., Jan. 1945; NMR's FFO-24-A-1, 408th Bomb. Sq., 26 Jan. 1945, FFO-28-E-4, 387th Bomb. Sq., 28 Jan. 1945, and FFO-28-A-1, 19th Bomb. Sq., 28 Jan. 1945.

28. AEB SWPA, Luzon, I, 232–33; rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, p. 20; NMR's FFO-29-E-7, 13th and 90th Bomb. Sqs., 29 and 30 Jan. 1945; FEAF DIR #147, 30 Jan. 1945, p. 2; memo for Col. W. N. Leaf, G-4 6th Army, from Maj. H. P. Carter, 1 Feb. 1945; GHQSWPA, Monthly Sum. of Opns., Jan. 1945, pp. 3–4.

29. Memo for Leaf from Carter, 10 Feb. 1945; 6th Army, Rpt. of the Luzon Campaign, III, 98; msg., Sillin to CG 5th AF, 022140 Feb. 1945; histories 348th Ftr. and 345th Bomb. Gps., Feb. 1945; Hist. 421st Night Ftr. Sq., Feb. 1945; Hist. 3d ER Sq., 15 Feb. 1944–28 Feb. 1945, p. 9; Hist. 309th Bomb. Wg., 5 Aug. 1943–25 Mar. 1946, pp. 6–7.

30. Msg., Swing to CINCSWPA, 071208 Feb. 1945; memo for AC/S G-3 8th Army from Col. E. McGinley, Arty. Off. 8th Army, 10 Jan. 1945; memo for C/S 8th Army from Col. F. S. Bowen, AC/S G-3 8th Army, 12 Jan. 1945; memo for C/S 8th Army from Bowen, 19 Jan. 1945; msg., CTF 77 to CTF 78, 180255 Jan. 1945; msg., CTF 78 to CTF 77, 200115 Jan. 1945; msg. FB-771, CG 8th Army to GHQSWPA, 21 Jan. 1945; msg., GHQSWPA to CG AAFSWPA, 23 Jan. 1945; GHQSWPA, DSEI #1081, 12/13 Mar. 1945, p. 5.

31. Msg. CX-56849, GHQSWPA to CG AAFSWPA, 16 Jan. 1945; msg. AX-32570, CG FEAF to CG 5th AF, 17 Jan. 1945; msg., CG 5th AF to GHQSWPA, 252322 Jan. 1945; FEAF DIR's #144, 27 Jan. 1945, p. B-1 and #151, 3 Feb. 1945, p. 2; Hist. V FC, Jan.–Mar. 1945, p. 22; Hist. XIII BC, Jan. and Feb. 1945; msg. KA-9629, CG 13th AF to CG 5th AF, 2 Feb. 1945; msg. KA-9639, CG 13th AF to CG 5th AF, 3 Feb. 1945.

32. Msg., CTG 77.11 to CTF 77, 240446 Jan. 1945; Hist. 54th TC Wg., Jan. 1945, p. 26; msg., CTG 77.11 to CTF 77, 310622 Jan. 1945; Hist. V FC, Jan.-

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Mar. 1945, p. 25; msg., CTG 78.2 to CG 8th Army, 310243 Jan. 1945.

33. 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. II; 5th AF Wkly. Intel. Rev. #62, 28 Jan.–3 Feb. 1945, p. 6; rpt., Comdr. Luzon Attack Force to COMINCH, 15 May 1945, p. 20.

34. Msg., CINCSWPA to CG 8th Army, 220255 Jan. 1945; memo for Maj. Smalley, Air Liaison Off. from Lt. Col. J. L. Crandell, Jr., Asst. G-3 8th Army, 22 Jan. 1945; ltr., Brig. Gen. C. E. Byars, C/S 8th Army to CG 5th AF, 26 Jan. 1945; msg. J-1066-E, CG 5th AF to CG 8th Army, 29 Jan. 1945; msg., CG 8th Army to CINCSWPA, 021327 Feb. 1945; msg. GH-19, 7th SAP to CG 5th AF, 3 Feb. 1945; msg., CG 8th Army to CINCSWPA, 021818 Feb. 1945.

35. AEB SWPA, Luzon, I, 148–61; 5th AF FFO 31-A, 31 Jan. 1945; Hist. 317th TC Gp., Feb. 1945; rpt., Lt. Col. L. A. Walsh, Jr., POA Observer, to CINCPOA, 30 Mar. 1945; FEAF DIR #153, 5 Feb. 1945, p. 2.

36. Msg., Eichelberger to CG 5th AF, 030900 Feb. 1945; msg., Eichelberger to CG 5th AF, 031000 Feb. 1945; ltr., Whitehead to Eichelberger, 4 Feb. 1945; 11th Airborne Div., G-4 Periodic Rpt. #68, 5 Feb. 1945; msg., CG 8th Army to CG 5th AF, 040020 Feb. 1945; 54th TC Wg., Stat. Rpt., Feb. 1945, p. 14.

37. 6th Army, Rpt. of the Luzon Campaign, I, 32–34.

38. 6th Army, Rpt. of the Luzon Campaign, I, 34–40; Hist. Sec., G-2 FEC, 14th Area Army Opns. on Luzon, Pt. II; 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. II.

39. GHQSWPA, DSEI #1045, 5 Feb. 1945, p. 4.

40. NMR #32-C, 405th Bomb. Sq., 2 Feb. 1945; 6th Army, Rpt. of the Luzon Campaign, I, 103; AEB SWPA, Luzon, I, 143–47, 172; rpt., XI Corps, M-7 Opns., p. 6; rpt., 1st Cav. Div., Luzon Campaign, Air Annex; msg., CG 8th Army to CG 5th AF, 051100 Feb. 1945; msg. CAX-50272, GHQSWPA Adv. to CG 8th Army, 5 Feb. 1945. For a ground view of the air action at Zig-Zag Pass see 34th Inf. Rpt., Opn. M-7, Western Luzon, pp. 99–115.

41. 5th AF Wkly. Intel. Rev. #62, 28 Jan.–3 Feb. 1945; JANAC, p. 24; V FC A-2 Sum. #32, 1 Feb. 1945.

42. CCS 894, 16 July 1945, in TERMINAL min., p. 212.

43. Ltr., MacArthur to CG's 6th and 8th Armies, COMANFSWPA, and CG AAFSWPA, 5 Feb. 1945.

44. Hist. 348th Ftr. Gp., Feb. 1945, pp. 2–3; 8th Army, Staff Study of Japanese Opns. on Luzon, Pt. II.

45. 6th Army, Rpt. of the Luzon Campaign, I, 48–51; 6th Army FO 48, 7 Feb. 1945; 5th AF FFO 42-A, 10 Feb. 1945; COMPHIBGPNINE, Opns. Plan #4–45, 10 Feb. 1945.

46. FEAF DIR #160, 12 Feb. 1945, p. 3; msg. F-262-D, 309th Bomb. Wg. to 348th Ftr. and 345th Bomb. Gps., 18 Feb. 1945; msg. F-295-D, 309th Bomb. Wg. to CG 5th AF, 19 Feb. 1945; 6th Army, Rpt. of the Luzon Campaign, I, 51–55.

47. 6th Army, Rpt. of the Luzon Campaign, I, 48–51.

48. Msg. A-34017, CG AAFSWPA to GHQSWPA, 21 Jan. 1945; msg. CAX-50092, GHQSWPA Adv. to CG AAFSWPA, 22 Jan. 1945; msg. J-1280-D, CG 5th AF to CG 13th AF, 22 Jan. 1945; AAFSWPA, Isum's #261, 4 Mar. 1945, sec. II, pp. 1–2 and #259, 18 Feb. 1945, sec. I, p. 2; msg., CTG 77.3 to CG 5th AF, 141004 Feb. 1945; COMPHIBGPNINE action rpt., in AEB SWPA, Luzon, III, item II-7(16).

49. AEB SWPA, Luzon, I, 183–94; USAFFE Bd. Rpt. #308: Corregidor I. Opn., 16 Feb.–8 Mar. 1945; 6th Army, Rpt. of the Luzon Campaign, I, 52–55; 14th AAA Comd., Monthly Sum. of Friendly Intel. #18, 15 May 1945, pp. 24–28.

50. 8th Army, Staff Study of Jap. Opns. on Luzon, Pt. II; msg. FH-8, 6th SAP to CG 5th AF, 20 Feb. 1945; FEAF DIR #173, 25 Feb. 1945, p. 3; msg., MacArthur to CG 6th Army, 28 Feb. 1945; GHQSWPA, DSEI #1070, 2 Mar. 1945, p. 4.

51. George C. Kenney, *General Kenney Reports* (New York, 1949), pp. 520–21.

52. Ltr., Col. W. M. Morgan, AC/S A-3 5th AF to CG 6th Army, 19 Feb. 1945; msg. WG-468, CG 6th Army to CG 5th AF, 19 Feb. 1945; 6th Army,

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Rpt. of the Luzon Campaign, I, 36, 77–78, 104.

53. Hist. V FC, Jan.–Mar. 1945, pp. 33–34; GHQSWPA, DSEI #1078, 10 Mar. 1945, p. 3.

54. 6th Army, Rpt. of the Luzon Campaign, I, 41, 61; AEB SWPA, Luzon, I, 125; rpt., 1st Cav. Div., Luzon Campaign, Air Annex.

55. Hist. V FC, Jan.–Mar. 1945, pp. 33–35; 6th Army, Rpt. of the Luzon Campaign, I, 72–76; XI Corps FO 17, 1 May 1945.

56. 6th Army, Rpt. of the Luzon Campaign, I, 72–76; see also *General Kenney Reports*, pp. 545–46.

57. 6th Army, Rpt. of the Luzon Campaign, I, 72–76; Hist. V FC, 1 Apr.–2 Sept. 1945 (see the many supporting documents regarding Ipo attached to this volume); 5th AF Wkly. Intel. Revs. #75, 29 Apr.–5 May 1945, #76, 6–12 May 1945, and #77, 13–19 May 1945. See also rpt., XI Corps, Luzon, p. 38.

58. Rpt., XI Corps, Luzon, p. 38.

59. AEB SWPA, Luzon, I, 161–68; 6th Army, Rpt. of the Luzon Campaign, I, 41–42; ltr., Walsh to CINCPOA, 30 Mar. 1945.

60. 6th Army G-3 Sec., Staff Study—Opn. to Clear South Luzon Westward of Laguna de Bay and the Bicol Peninsula, 5 Mar. 1945.

61. *Ibid.*

62. 6th Army, Rpt. of the Luzon Campaign, I, 60–63; msg. R-0230-E, CG 5th AF to CG 13th AF, 26 Mar. 1945; msg., CG XIV Corps to CG 6th Army, 261305 Mar. 1945; ltr., Col. J. T. Walsh, AG XIV Corps to CG 6th Army, 27 Mar. 1945.

63. 6th Army, Rpt. of the Luzon Campaign, I, 63–65; msg. CX-11893, MacArthur to CG AAFSWPA *et al.*, 10 Mar. 1945; 5th AF FFO 80-A, 20 Mar. with Annex 1, 21 Mar. 1945; msg. R-7159-E, CG 5th AF to CG 6th Army, 22 Mar. 1945; Hist. 310th Bomb. Wg., 1 Feb.–30 Apr. 1945, p. 12; msg. R-0104-E, CG 5th AF to CG 13th AF, 24 Mar. 1945; msg. R-0103-E, CG 5th AF to 310th Bomb. Wg., 24 Mar. 1945; msg. F-5926, CG 13th AF to CG 6th Army, 26 Mar. 1945; Hist. XIII BC, Mar. 1945; Hist. 494th Bomb. Gp., Mar. 1945; msg. WG-1444, CG 6th Army to CG 5th AF, 21 Mar. 1945; msg. R-7080-E, CG 5th AF to CG 6th Army, 21 Mar. 1945; msg. R-0661-E, CG 5th AF to 310th Bomb. Wg., 30 Mar. 1945; msg. R-0689, CG 5th AF to 310th Bomb. Wg., 30 Mar. 1945; memo for G-3 6th Army from Col. Paul Weyrauch, Asst. G-3 6th Army, 10 Apr. 1945.

64. Msg., CTF 78 to CG 5th AF, 031543 Apr. 1945.

65. 6th Army, Rpt. of the Luzon Campaign, I, 65–72.

66. Ltr., Maj. Gen. J. M. Swing, CG 11th Airborne Div. to CO 8th Ftr. Gp., 4 May 1945; Hist. 8th Ftr. Gp., May 1945.

67. Ltr., Swing to CO 8th Ftr. Gp., 4 May 1945.

68. GHQSWPA, Monthly Sums. of Opns., Feb. and Mar. 1945.

69. *Ibid.*, Apr. 1945.

70. 6th Army, Rpt. of the Luzon Campaign, I, 79–87; GHQFEC, Intel. Ser. V: Operations of the ATIS, p. 49; ltr., Maj. Gen. R. S. Beightler, CG 37th Div. to CG 5th AF, 1 July 1945.

71. Memo for G-3 6th Army from Maj. G. H. Reppert, Asst. G-3 6th Army, 9 May 1945.

72. Memo for G-3 6th Army from Reppert, 13 Apr. 1945; msg., 23d SAP to CG 5th AF, 140900I May 1945; 6th Army, Rpt. of the Luzon Campaign, I, 87–90; rpt., 32d Inf. Div., MIKE I Opn., Annex #3. For an excellent summary of 6th Division air-ground tactics in its advance up Highway 4, see rpt., 6th Inf. Div., Final Phase of Luzon Campaign, 22 Aug. 1944, pp. 28–34.

73. GHQSWPA, DSEI #1176, 24 June 1945, p. 4; 6th Army, Rpt. of the Luzon Campaign, I, 92–98.

74. Hist. 317th TC Gp., June 1945; rpt., 6th Inf. Div., Final Phase of Luzon Campaign, pp. 28–34. See Hist. FEAF, I, 187–90, for MIKE VIII and MIKE IX planning, both involving a divisional airborne landing in the Cagayan Valley.

75. Ltr., Whitehead to CG FEAF, 24 Mar. 1945; msg. AX-73065, CG FEAF to CINCSWPA, 28 Mar. 1945; msg. CA-51276, MacArthur to FEAF, 29 Mar. 1945; 6th Army, Rpt. of the Luzon Campaign, I, 105.

76. Msg. WL-1218, CG 6th Army to CG 5th AF, 2 Feb. 1945; msg. WL-907, CG 6th Army to CG FEAF, 30 Jan.

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1945; msg. WG-27, Krueger to CG FEAF, 4 Feb. 1945; msg. A-35745, CG FEAF to CG 5th AF, 8 Feb. 1945.

77. After an incident in which SBD's strafed friendly positions of the 1st Cavalry Division on 11 Feb. 1945, General Mudge wished the pilots informed that: "We understand that accidents will happen. We have short rounds in our artillery. Investigation was necessary to prevent repetition of error. We bear no grudge or ill feeling" (msg. CD-16, 3d SAP to CG 5th AF, 12 Feb. 1945).

78. Msg. F-1625-A, Whitehead to 308th Bomb. Wg., 4 Feb. 1945. P-51 restrictions on flying over Luzon were not lifted until 8 Feb. 1945 (msg. F-1977-E, CG 5th AF to V BC *et al.*, 7 Feb. 1945).

79. Msg. AX-34888, Kenney to CG 5th AF, 31 Jan. 1945; msg. J-12-D, CG 5th AF to All Comdrs., 31 Jan. 1945.

80. Msg. F-4597-A, CG 5th AF to CG 6th Army, 24 Feb. 1945; Hist. V BC, Feb. 1945, p. 27.

81. Msg., CG 5th AF to All SAP's, 060041 Feb. 1945; msg. KV-100, 24th SAP to CG 13th AF, 14 Apr. 1945.

82. Msg. WG-1004, CG 6th Army to CG 5th AF, 16 Mar. 1945; msg. WG-463, CG 6th Army to GHQSWPA Adv., 8 Apr. 1945.

83. AEB SWPA, Luzon, I, 146–47, III, Exhibits 54–68. Only the CG 25th Inf. Div. refused to comment on air support, but his operational narrative was enthusiastic on the subject. See Operation of the 25th Inf. Div., Luzon, 17 Jan. 1945–30 June 1945, pp. 176–78.

84. GHQ AFPAC, Pacific Warfare Board Report #69, 21 Sept. 1945.

85. 37th Div., Sum. of Interrog. of General Yamashita and other Responsible Commanders and Staff Officers, n.d.

86. Ltr., Whitehead to CG FEAF, 24 Dec. 1944; memo for CINCSWPA from Kinkaid, 21 Dec. 1944; msg. AX-97066, CG FEAF to CG 5th AF, 1 Jan. 1945; msg. J-638-A, 310th Bomb. Wg. to CG 5th AF, 3 Jan. 1945; msg. J-1754-A, 310th Bomb. Wg. to CG 5th AF, 24 Jan. 1945; msg. J-1559-A, CG 5th AF to 310th Bomb. Wg., 25 Jan. 1945; Hist. 310th Bomb. Wg., Dec. 1944–Jan. 1945, p. 47, Feb.–Apr. 1945, p. 18. McGuire Field was named in honor of Maj. Thomas B. McGuire, 475th Ftr. Gp., killed in action on 7 Jan. 1945.

87. Ltr., Kenney to Arnold, 28 Dec. 1944.

88. Ltr., Arnold to Kenney, 13 Oct. 1944; see also ltr., Arnold to Kenney, 15 Dec. 1944.

89. CM-OUT-71548, JCS to CINCSWPA and CINCPOA, 21 Apr. 1945; CM-OUT-79224, JCS to CINCSWPA *et al.*, 8 May 1945.

90. Memo for A-3 FEAF from Col. W. E. B[ryte], A-5 FEAF, 9 Dec. 1944; memo for record by Lt. Col. E. S. Leland, A-5 FEAF, 20 Feb. 1945.

91. AEB SWPA, Luzon, I, 313–23; msg. CX-10480, CINCSWPA to CG AAFSWPA *et al.*, 17 Feb. 1945; msg. CAX-50610, CINCSWPA to CG AAFSWPA *et al.*, 23 Feb. 1945; FEAF A-4 Periodic Project Rpt., 1 May–1 June 1945, pp. 15–17.

92. Msg. R-0152-E, CG 5th AF to CG FEAF, 24 Mar. 1945; Hist. 5th AF, June 1944–Sept. 1945, pp. 90–92; AAFSWPA Opns. Rpt. #54, 26 May–1 June 1945; interview with Mr. Robert W. Schmidt, former Hist. Off., 5th AF, 2 Aug. 1950.

93. Msg. CX-13625, GHQSWPA to COMANFSWPA *et al.*, 6 Apr. 1945; Hist. FEAF, I, 332.

94. Hist. FEASC, Dec. 1944, pp. 1–3.

95. *Ibid.*, Jan. 1945, p. 24.

96. *Ibid.*, Feb. 1945, pp. 1–12; FEASC, Warning Orders #1, 12 Feb. 1945, and #1/1, 24 Feb. 1945.

97. Hist. FEASC, Mar. 1945, p. 27.

98. Ltr., Col. W. H. Hardy, A-4 FEAF to Lt. Col. J. H. Hicks, Chief, Supply Div., FEASC, 19 Apr. 1945.

99. FEASC GO 44, 18 Apr. 1945; Hist. FEASC, Apr. 1945, p. 6.

100. Hist. FEASC, May 1945, pp. 4–6.

101. *Ibid.*, Aug. 1945, p. 2.

102. AEB SWPA, Luzon, I, 313–23; msg. AX-73646, CG AAFSWPA to CINCSWPA, 2 Apr. 1945; msg. CAX-51412, MacArthur to CG AAFSWPA, 6 Apr. 1945; memo for Whitehead from Col. D. W. Hutchison, 5 Mar. 1945; ltr., Hutchison to Whitehead, 8 Mar. 1945; memo for Whitehead from Hutchison, 12 Mar. 1945; msg. U-3477, CG 5th AF to CG ENCOM, 14 June 1945; msg., CO 3d Air Commando Gp. to 308th Bomb. Wg., 221715 May 1945; msg. A-90794,

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CG FEAF to CG 5th AF, 24 May 1945; AFWESPAC, Logistics Instr. #73/38/SOS, 7 June 1945. See also Hist. 308th Bomb. Wg., 1 Jan.–28 May 1945, pp. 37–39.

NOTES TO CHAPTER 15

1. Radg., CA 50688, CINCSWPA to WD, 26 Feb. 1945 (WD CM-IN-27255, 26 Feb. 45).

2. Ltr., Whitehead to Kenney, 31 Jan. 1945.

3. Hist. FEAF, pp. 5–9, 11–24.

4. Basic Plan for MONTCLAIR Operations, 25 Feb. 1945. See also its predecessor, PRINCETON, Basic Outline Plan for Re-occupation of the Visayas-Mindanao-Borneo-N.E.I. Area, 7 Nov. 1944, and Hist. FEAF, Vol. II, Campaigns in the Southern Philippines and Borneo. This excellent study was prepared by Maj. Arthur P. Watts and Capt. James E. Cordner, wartime FEAF historians. It will be used extensively in this chapter and full acknowledgment is made to the authors. Maj. Watts concerned himself with the over-all planning; Capt. Cordner's sections are concerned with the OBOE operations and are principally based on the very excellent after-action reports and critiques issued by the RAAF Command for each separate OBOE action.

5. Allied AF, OI #90, 20 Feb. 1945; Maj. Gen. Yoshiharu Tomochika, The True Facts of the Leyte Operation [hereinafter cited as True Facts], p. 11, translated by 166th Language Det., reproduced by 10th Info. & Hist. Serv., 8th Army.

6. Hist. FEAF, pp. 164–227. The tentative target date of 25 February was changed to 28 February because of the necessity of moving air units from rear bases to the staging area (Hq. FEAF, Memo for Record, Reference Allocation of Shipping for VICTOR III Opns., 5 Feb. 1945).

7. Hist. FEAF, pp. 164–86; Eichelberger, *Road to Tokyo*, p. 205; Hist. XIII FC, Feb. and Mar. 1945; FEAF Air Engr. to FEAF A-5, Airdrome Site at Puerto Princesa, 2 Feb. 1945; C/S FEAF to CG 13th AF Advon, Re GHQ Staff Study VICTOR IV, 2 Feb. 1945; conference at G-3 Plans, 4 Feb. 1945; FEAF A-5 File, Memo for Record on VICTOR III; FEAF to CINCSWPA, Provision of A/D Facilities at VICTOR III, 5 Feb. 1945; GHQSWPA Staff Study, VICTOR III, 6 Feb. 1945; Tomochika, True Facts, p. 11.

8. Hist. FEAF, pp. 183–201.

9. 13th AF Ltr. of Instr. #1, 19 Feb. 1945; Hist. V BC, Feb. 1945, pp. 1–28; Hist. V FC, Jan.–Mar. 1945, pp. 40–42.

10. See *n* 9.

11. Hist. XIII FC, Mar. 1945, pp. 1–6, 29–31; GHQSWPA, Monthly Sum. of Opns., Mar. 1945.

12. Hist. XIII FC, Mar. 1945, pp. 19–20; Hist. FEAF, pp. 224–26; Hist. V FC, Jan.–Mar. 1945, pp. 46–50; Office of Marine Hist., Dept. of Navy, *Marine Aviation in the Philippines*, [hereinafter cited as *Marine Air, P.I.*], chap. IV, "Southern Philippines Campaigns," p. 12.

13. Hist. FEAF, pp. 202–4; O.N.I. Wkly., Vol. IV, #11, 14 Mar. 1945, p. 816; True Facts, p. 11; GHQ Staff Study, VICTOR IV, 12 Feb. 1945; 41st Div. Arty. After-Action Rpt., V-4 Opn., p. 4.

14. Hist. FEAF, pp. 226–27.

15. *Ibid.*, pp. 215–26.

16. Hist. V BC, Mar. 1945, p. 14; Hist. XIII FC, Mar. 1945, p. 7; Hist. XIII BC, Mar. 1945, p. 1; Hist. FEAF, pp. 218–23.

17. Eichelberger, *Road to Tokyo*, p. 206.

18. 41st Div. Arty. After-Action Rpt., V-4 Opn., pp. 7–39; GHQSWPA Monthly Sum. of Opns., Mar. 1945, p. 7; Eichelberger, *Road to Tokyo*, p. 207; Hist. XIII BC, Mar. 1945, pp. 42–65.

19. See sources cited in *n* 18 and Hist. XIII FC, Apr.–Aug. 1945; Hist. XIII BC, Apr. 1945.

20. Eichelberger, *Road to Tokyo*, pp. 208–31. For details on these operations see Eighth Army and division reports.

21. Hist. FEAF, pp. 228–85.

22. Eichelberger, *Road to Tokyo*, pp. 200–6, 233.

23. 8th Army Fld. and Admin. Orders; 41st Div. Arty. After-Action Rpt., V-4 Opn.

24. Eichelberger, *Road to Tokyo*, pp. 207–9; Hist. FEAF, pp. 228–33.

25. Hist. XIII BC, Mar. 1945, pp. 42–63; Hist. V BC, Mar. 1945, p. 22.

26. Eichelberger, *Road to Tokyo*, pp. 207–9; GHQSWPA, Monthly Sum. of

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Opns., Mar. 1945, p. 8; O.N.I. Wkly., Vol. IV, #12, 21 Mar. 1945, pp. 897–901.

27. Hist. FEAF, pp. 228–37; GHQ-SWPA Staff Study, VICTOR I, 18 Feb. 1945 and OI, 22 Feb. 1945; Eichelberger, *Road to Tokyo,* p. 211.

28. GHQSWPA, Monthly Sum. of Opns., Mar., Apr., June, and July 1945; Eichelberger, *Road to Tokyo,* pp. 210–11; O.N.I. Wkly., Vol. IV, #12, 4 Apr. 1945.

29. Hist. FEAF, pp. 243–53; GHQ-SWPA Staff Study, VICTOR II, 22 Feb. 1945; Eichelberger, *Road to Tokyo,* pp. 212–15.

30. Hist. XIII BC, Mar. 1945, pp. 42–63; Hist. XIII FC, Mar. 1945, pp. 19–20; Hist. FEAF, p. 261; Hist. V FC, Jan.–Mar. 1945, pp. 46–50; GHQSWPA, Monthly Sum. of Opns., Mar. 1945, pp. 9–10; Eichelberger, *Road to Tokyo,* pp. 211–15; O.N.I. Wkly., Vol. IV, #13, 28 Mar. 1945.

31. Eichelberger, *Road to Tokyo.*

32. GHQSWPA, Monthly Sum. of Opns., Mar., Apr., and June 1945; O.N.I. Wkly., Vol. IV, #16, 18 Apr. 1945; *Marine Air, P.I.,* chap. IV, pp. 24–25.

33. Hist. FEAF, pp. 266–68; Eichelberger, *Road to Tokyo,* pp. 216–45; 8th Army opnl. monograph Mindanao, pp. 21, 311. Eichelberger's book gives estimates of enemy strength which are in conflict with the apparently more authoritative Eighth Army monograph.

34. Eichelberger, *Road to Tokyo,* pp. 222–23, 233; True Facts, pp. 12, 35–50.

35. Hist. XIII BC, Apr. 1945, pp. 50–70; *Marine Air, P.I.,* chap. IV, pp. 36–37.

36. Col. Wendell W. Fertig, a civilian engineer, had remained on Mindanao and organized guerrilla units there. Although widely scattered and mostly out of physical contact, when radios and other supplies began to reach them during 1943 and 1944, Col. Fertig was able to achieve the semblance of an organized command. He made his headquarters in the Lake Lanao region and supplied reliable intelligence to MacArthur and was consulted by Eichelberger on the Mindanao planning (Eichelberger, *Road to Tokyo,* pp. 216–19).

37. Eichelberger, *Road to Tokyo,* pp. 216–21; GHQSWPA, Monthly Sum. of Opns., Apr. 1945, pp. 9–11; *Marine Air, P.I.,* pp. 38–39.

38. Eichelberger, *Road to Tokyo,* pp. 221–31; GHQSWPA, Monthly Sum. of Opns., Apr., May 1945; O.N.I. Wkly., Vol. IV, #17, 25 Apr. 1945 and #18, 2 May 1945.

39. Hist. 13th AF, Apr.–June 1945, pp. 17–20.

40. *Marine Air, P.I.,* pp. 39–53. In May and June, the dive-bomber groups began converting from SBD's to SB2C's.

41. Eichelberger, *Road to Tokyo,* pp. 216–45; GHQSWPA, Monthly Sum. of Opns., May, June, and July 1945; *Marine Air, P.I.,* pp. 38–55; O.N.I. Wkly., Vol. IV, #18, 2 May 1945.

42. See especially GHQSWPA Staff Study for OBOE I, 9 and 18 Mar. 1945; GHQSWPA, OI #99, 21 Mar. 1945; AAFSWPA, OI #95, 24 Mar. 1945; RAAF Comd. AAFSWPA, Rpt. of OBOE ONE Opn. (RAAF Comd. Adv. Hq., Morotai, May 1945) [hereinafter cited as OBOE ONE], App. D to H; Hist. FEAF, pp. 294–317.

43. Hist. XIII BC, Apr. 1945, pp. 5–10; Hist. XIII FC, Apr.–Aug. 1945; Hist. FEAF, pp. 317–21.

44. Hist. XIII BC, May–June 1945, pp. 2–7, 98–129; Hist. XIII FC, Apr.–Aug. 1945, pp. 40–54; Hist. FEAF, pp. 317–26; OBOE ONE.

45. RAAF Comd. AAFSWPA, Rpt. of OBOE SIX Opn. (RAAF Comd. Adv. Hq., Morotai, June 1945) [hereinafter cited as OBOE SIX]; Hist. XIII BC, May–June 1945, pp. 7–10; Hist. FEAF, pp. 386–94; Hist. V BC, May–June 1945, pp. 108–15; Hist. XIII FC, Apr.–Aug. 1945, pp. 63–69.

46. OBOE SIX, p. 5.

47. See sources in *n* 45 and Hist. FEAF, pp. 394–421.

48. RAAF Comd. AAFSWPA, Rpt. of OBOE TWO Opn. (RAAF Comd. Adv. Hq., Morotai, July 1945), pp. 2–15.

49. OBOE ONE and App. A and H; Hist. V BC, May–July 1945; Hist. XIII BC, May–June 1945.

50. OBOE ONE; Hist. XIII FC, Apr.–Aug. 1945; Hist. FEAF, pp. 461–74.

51. OBOE ONE; Hist. FEAF, pp. 474–502.

52. OBOE ONE; Hist. FEAF, pp.

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502–14; Hist. XIII FC, Apr.–Aug. 1945; Hist. XIII BC, July–Aug. 1945.

NOTES TO CHAPTER 16

1. USSBS, The Formosa Report (prelim. draft) by Maj. J. C. McClure, Jr., Sr. Member Formosa Bomb Survey Party, 1 Jan. 1946 [hereinafter cited as Formosa Report]; Theodore Roscoe, *United States Submarine Operations in World War II* (Annapolis, 1945), p. 313 [hereinafter cited as *Submarine*].

2. 5th AF Hq. A-2 Wkly. Intel. Rev. #63, Notes on Formosa (Taiwan) [hereinafter cited as 5th AF A-2 Rev.], 4–10 Feb. 1945; Plan for Fifth Air Force 1945 Operations, App. 1, pp. 12–13; Hist. 5th AF, 15 June 1944–2 Sept. 1945, chap. 8. This chapter borrows heavily from a chapter of the V Bomber Command history prepared by Capt. Charles D. Edwards under the supervision of the author. Captain Edwards was attached to the Intelligence Section, V Bomber Command as Target Information Officer. Sources used were target information folders based on ATIS material and photographic interpretation, V Bomber Command daily intelligence summaries (based on final mission reports and photo interpretation), squadron and group final mission reports, V Fighter Command daily intelligence summaries, Fifth Air Force daily annex and weekly intelligence reviews, Allied Air Forces, SWPA periodic intelligence summaries, statistical control unit data and compilations, Form 34's, and the wide personal experience of Captain Edwards in preparing briefing materials for the missions against Formosa and the evaluation of bombing results, particularly in reference to the necessity of repeat missions. This chapter was written after the war as part of the Overseas Historical Project of the Air Historical Office. It will be cited hereinafter as "V BC Formosa." See also Plan for 5th AF 1945 Opns., App. 3, pp. 3–4; Area Bomb Study Five, Formosa Area #11; Hist. 5th AF, chap. 8; FEAF Hq., 2d and 3d OAS, Heavy Bomber Effort in an Air Campaign Against Formosa, 3 Mar. 1945, Rpt. #34, p. 7; 5th AF A-2 Rev. #82, 17–23 June 1945, Annex F.

3. V BC Formosa; 5th AF Air Intel. Wkly. Digest, 21 Mar. 1945, p. 35; 5th AF Isum #261, 1 Mar. 1945.

4. Ltrs., Whitehead to Kenney, 18 Sept. 1944, 9 Mar. 1945; V BC Formosa; USSBS Formosa Rpt.

5. Gen. Chamberlin, GHQ G-3, memo for record, sub.: Conf. at G-3 GHQ-SWPA, 1000, 31 Jan. 1945; radg. CX 1295, MacArthur to CG AAF, 261159Z Mar. 1945; radg., GHQ to China Theater, CINCPOA, 14th AF, Allied AF, 25 Jan. 1945, in Outgoing Radio GHQ 311.23; radg. CX 47543, GHQ Advon to CG AAF, 19 Feb. 1945.

6. V BC Formosa; Hist. 63d Bomb. Sq., Jan. 1945, pp. 14–16.

7. Hist. 63d Bomb. Sq., Jan. 1945, pp. 16–21.

8. *Ibid.*, pp. 24–28.

9. *Ibid.*, pp. 29–30, 43–46.

10. *Ibid.*, p. 30; Hist. 63d Bomb. Sq., Feb. 1945, pp. 4–15; Comm. Sec. Hist. and Weather Sec. Hist. in Hist. V BC, Feb. 1945.

11. Radg. 311.23, CG 5th AF to FEAF, 13 Jan. 1945; radg. #AX 32582, CG AAFSWPA to CINCPOA and COMSUBPAC, 171110/I Jan. 1945; Hist. 22d Bomb. Gp., Jan. 1945; Hist. V FC, Jan.–Mar. 1945, p. 51; 5th AF FFO's 16, 21, 22.

12. AAFSWPA Isum #257, 5 Feb. 1945, p. VIII–2; V FC Daily Isums, 22 and 23 Jan. 1945; AAFSWPA Isum #256, 29 Jan. 1945, p. I–1; Hist. V FC, Jan.–Mar. 1945, p. 51; Hist. V BC, Jan. 1945, p. 46; V BC Daily Isum, 23 Jan. 1945.

13. Hist. V BC, Jan. and Feb. 1945; V BC Daily Isum, 29 Jan.–3 Feb. 1945; V BC Formosa.

14. V BC Formosa; Hist. V BC, Feb. 1945; V BC Daily Isums, 7–20 Feb. 1945; 5th AF A-2 Revs. 63, 64, 65, 4–24 Feb. 1945.

15. Hist. V BC, Feb. and Mar. 1945; V BC Daily Isums, 20 Feb.–4 Mar. 1945; V BC Formosa; 5th AF A-2 Revs. 65. 66, 18 Feb.–3 Mar. 1945.

16. Hist. V BC, Mar. 1945; V BC Formosa; V BC Daily Isums, 4–30 Mar. 1945; 5th AF A-2 Revs. 67, 68, 69, 70, 4–31 Mar. 1945.

17. V BC Formosa; Hist. V BC, Apr. 1945; V BC Daily Isums, 1–18 Apr. 1945; 5th AF A-2 Revs. 71, 72, 73, 1–21 Apr. 1945.

18. V BC Formosa; Hist. V BC, Mar.

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and Apr. 1945; V BC Daily Isums, 14 Jan.–1 Apr., 18 Apr.–5 May 1945.

19. V BC Formosa; USSBS Formosa Rpt.

20. USSBS Formosa Rpt.; interview with Col. Ishikawa, Chief of Opns., 8th Air Div., in USSBS Formosa Rpt.

21. *Ibid.;* V BC Formosa.

22. See *n* 21 above.

23. V BC Formosa; V BC Daily Isums, Mar., Apr., May, and June 1945; Hist. V BC, Mar., Apr., and May 1945; 5th AF A-2 Revs. 66–83, Mar.–July 1945.

24. *Admiral Halsey's Story,* p. 253.

25. V BC Formosa; V BC Daily Isums, May, June, and July 1945.

26. V BC Formosa; V BC Daily Isums, 28 Feb. and 5 Apr. 1945.

27. V BC Formosa; V BC Daily Isums, Mar., Apr., May, June, and July 1945; 5th AF A-2 Revs. 66–88, Mar.–Aug. 1945.

28. See *n* 27 above.

29. USSBS Formosa Rpt.; USSBS, The Effects of Strategic Bombing on Japan's War Economy, pp. 38–39.

30. V BC Formosa; Hist. V BC, June–July 1945.

31. V BC Formosa; Hist. V FC, Jan.–Mar. 1945, chap. 5.

32. Hist. V BC, Apr.–May 1945; Hist. V FC, 1 Apr.–2 Sept. 1945, chap. 6; V BC Formosa.

33. Report of the Governor General of Formosa, in USSBS Formosa Rpt.

34. V BC Formosa; 5th AF A-2 Revs. 68 and 69, 11–17 Mar. and 18–24 Mar. respectively; Hist. V BC, Mar. 1945; Hist. V FC, 1 Apr.–2 Sept. 1945, chap. 6; AAFSWPA Isum #264. The last source lists fourteen P-51's bombing and strafing Jitsugetsutan on 12 March, but the author could find no confirmation of this mission in 5th AF Intel. Rev., the V FC Periodic Rpt., or in any of the unit histories. In such cases where other reports are lacking a mission could very possibly be listed in this source as ordered in the daily FFO though it was not actually flown and/or the planes were diverted later to some other target.

35. USSBS Formosa Rpt.; 5th AF A-2 Rev. #68, 11–17 Mar. 1945.

36. 5th AF A-2 Rev. #82, 17–23 June 1945, Annex F; AAFSWPA Isum #264, 24 Mar. 1945; V BC Formosa. Invasion of the Philippines had cut off a large potential supply. The plant at Del Carmen, Luzon, was not yet completed, but it might have been the largest in the world.

37. V BC Formosa; Hist. V BC, Mar. 1945.

38. V BC Formosa; Hist. V BC, Mar., Apr., May, and June 1945.

39. See *n* 38 above.

40. V BC Formosa; USSBS Formosa Rpt. Though the Japanese had never used air transport extensively, it was estimated that they might attempt to transport alcohol and butanol supplies to Japan either by air or by high speed destroyer transport prior to the attack on Japan's home islands, in order to bolster their dwindling supplies. The destruction of the alcohol plants negated this possibility.

41. V BC Formosa; 5th AF, 34th SCU, Area Bomb Study 5, Formosa Area [hereinafter cited as Area Bomb Study 5].

42. V BC Formosa; Hist. V BC, Jan.–May 1945; 5th AF A-2 Revs. 59–79, 7 Jan.–2 June 1945.

43. V BC Formosa; Hist. V BC, Apr.–May 1945; 5th AF A-2 Revs. 71–79, 1 Apr.–2 June 1945.

44. V BC Formosa; Hist. V BC, Apr.–May 1945; Hist. 345th Bomb. Gp., May 1945; Hist. 501st Bomb. Sq., May 1945; 5th AF A-2 Rev. #76, 6–12 May 1945; V BC A-2 Periodic Rpt., 12/13 May 1945. Accounts vary as to whether Mathew's plane hit the strip at Kobi or bounced off a revetment at Kagi. The 501st Squadron history has been followed here.

45. V BC Formosa; Hist. V BC, Apr.–May 1945; 5th AF A-2 Revs. 71–79, 1 Apr.–2 June 1945.

46. V BC Formosa; Hist. V BC, June–July 1945; 5th AF A-2 Revs. 79–88, 2 June–4 Aug. 1945.

47. V BC Formosa; USSBS Formosa Rpt.; Area Bomb Study 5.

48. USSBS Formosa Rpt.; V BC Formosa.

49. See *n* 48 above; note on USSBS interview.

50. Area Bomb Study 5; V BC Formosa; USSBS Formosa Rpt. The statistics given in the Bomb Study list a total of 107,445 gallons of napalm, but a careful check of the figures indicates an er-

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ror in addition; the correct figure of 62,445 gallons is given in the text.

51. Hist. V BC, Apr.–May 1945, p. 8; V BC Formosa.

52. AAFSWPA Isum #273, 26 May 1945, pp. 10–14.

53. USSBS Naval Analysis Div., The Offensive Mine Laying Campaign Against Japan, 1 Nov. 1946, pp. 10–14 [hereinafter cited as USSBS Mining]; Hq. RAAF Comd., AAFSWPA rpt., 1 Sept. 1945, in USSBS Mining, pp. 111–23.

54. USSBS Interrogs. #463 and #251, Rear Adm. Akira Matsuzaki.

55. Hq. RAAF Comd. AAFSWPA, Opnl. Rsch. Sec., 15 July 1944; USSBS Mining, pp. 2, 82–83, 112–23. See also USSBS Interrog. #226, 27 Oct. 1945, Comdr. Saburo Tadenuma, Kure Mine Sq. Staff Officer; USSBS Interrog. #34, Capt. Kyuzo Tamura, IJN; USSBS Interrog. #517, Rear Adm. Nakamora.

56. USSBS Mining, pp. 9–13; USSBS Trans. Div., The War Against Japanese Transportation, May 1945, p. 4; CBI Eval. Bd. Rpt. #4.

57. CBI Eval. Bd. Rpt. #4.

58. See sources cited in *n* 56.

59. Hist. 63d Bomb. Sq., Feb. 1945.

60. 5th AF Wkly. Intel. Rev. #64, 11–17 Feb. 1945, p. 1 and period 11/12 to 15/16 in insert; Hist. V BC, Feb. 1945, pp. 18–19; V BC A-2 Periodic Rpts. 44, 45, 12/13 and 13/14 Feb. 1945; radg., CTG 73.8.2 to all concerned with 73 searches, 131358Z Feb. 1945; ltr., CO 309th Bomb. Wg. to Whitehead, CG 5th AF, 14 Feb. 1945, in folder of Whitehead-Kenney ltrs.; radg. AX 37399, CG FEAF to CG 5th AF, 132310I Feb. 1945; USSBS Interrog. #441, 25 Nov. 1945.

61. 5th AF A-2 Rev. #64, 11–17 Feb. 1945, pp. 1, 5; V BC A-2 Periodic Rpt. #46, 14/15 Feb. 1945; radg. F-2646-D, CG 5th AF to CG FEAF, 132341I Feb. 1945; radg. F-2705-A, CG 5th AF to CG FEAF, 141714I, Feb. 1945; radg. Navy passed by 7th Fleet to CG 13th AF, CINCSWPA to CG 5th AF, 130938Z Feb. 1945; USSBS Interrog. #441, 25 Nov. 1945.

62. V BC Formosa; Hist. V BC, Feb. 1945; 5th AF A-2 Rev. #65, 18–24 Feb. 1945; JANAC.

63. V BC Formosa; Hist. V BC, Mar. 1945; JANAC; 5th AF A-2 Revs. 66, 67, and 68, 25 Feb.–18 Mar. 1945.

64. Hist. 63d Bomb. Sq., Mar. 1945, pp. 25–28, 73–87; JANAC; V BC Formosa. The light cruiser identified was probably a large destroyer.

65. See *n* 64 above; 5th AF A-2 Rev. #70, 25–31 Mar. 1945. There is no other evidence or claim made for this ship which is listed in position 22°40′N-120° 15′E when sunk. The position was beyond the range of Fourteenth Air Force B-24's at that time.

66. Radg. R-7157-A, CG 5th AF to CG FEAF, 22 Mar. 1945; radg. CAKX, China to MacArthur, 26 Mar. 1945; radg. CX 12988, GHQSWPA to CG AAF, 261115Z Mar. 1945.

67. Hist. 63d Bomb. Sq., Mar. 1945.

68. USSBS Interrog. #468, 29 Nov. 1945, Capt. Tokuma Abe.

69. Hist. V FC, Jan.–Mar. 1945; USSBS, Oil in Japan's War, Feb. 1946, p. 52; USSBS Interrog. #199, 30 Oct. 1945, Rear Adm. Shigetdg Horuichi; USSBS Interrog. #228, 1 Nov. 1945, Lt. (j.g.) Y. Okuno; USSBS Interrog. #61, 18 Oct. 1945, Capt. Atshushi Oi, IJN.

70. JANAC; Hist. XIII BC, Mar., Apr., May, and June 1945.

71. V BC Formosa; Hist. V BC, Mar. and Apr. 1945; Hist. 345th Bomb. Gp., Apr. 1945.

72. V BC Formosa; Hist. V BC, Apr. 1945; Hist. 3d Bomb. Gp., Apr., 1945; interview with Col. Ellis by the author, Mindoro, Apr. 1945 and Luzon, May 1945.

73. V BC Formosa; Hist. V BC, Apr. 1945; Hist. 345th Bomb. Gp., Apr. 1945 and supplementary narrative rpt., Mission FFO 96-D-28, dtd. 27 Apr. 1945. The original mission report claimed four destroyer escorts—the third squadron believing its attack had been on a third frigate—but photo-interpretation corrected the error. The half-destroyer had presumably been hit by a sub previous to its repair.

74. Hist. 63d Bomb. Sq., Apr. 1945; V BC Formosa; JANAC.

75. V BC Formosa; Hist. V BC, Apr., May, June 1945; Hist. 63d Bomb. Sq., Apr., May, and June 1945; JANAC. Here again most ship sinkings during this period are credited to Army mines, and

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positions cited are farther north. It is possible, however, that some of these vessels clearing the port at Shanghai and never heard from might have been sunk by the night bombers rather than Army mines.

76. Ltr., Whitehead to Kenney, 9 Apr. 1945, in folder, Whitehead-Kenney ltrs., in USAF Hist. Div.

77. Memo for record cited in *n* 5 above; radg. AX 35110, CG AAFSWPA to CINCSWPA, 021410I Feb. 1945; radg. CX 57543, GHQ Advon to CG AAF, 19 Feb. 1945; radg. CAX 51050, CINCSWPA to CG AAF; radg. CX 1295, CINCSWPA to CG AAF, 26 Mar. 1945.

78. Radg. AX 72952, CG AAFSWPA to CG 5th AF, CG 13th AF, and COMAIR7THFLT., 28 Mar. 1945; V BC Formosa.

79. V BC Formosa; Hist. V BC, Mar., Apr., and May 1945; Hist. 5th AF, 15 June 1944–2 Sept. 1945, chap. 9, pp. 28–46.

80. See *n* 79 above; Hist. XIII BC, Apr. 1945, p. 10.

81. V BC Formosa; Hist. V FC, 1 Apr.–2 Sept. 1945, chap. 6, pp. 46–49; Hist. 5th AF, 15 June 1944–2 Sept. 1945, chap. 9, pp. 28–46.

82. See *n* 81 above; Hist. V BC, Apr.–May 1945.

83. V BC Formosa; Hist. V BC, Apr.–May 1945; Hist. 5th AF, 15 June 1944–2 Sept. 1945, chap. 9, pp. 28–46.

84. See *n* 83 above.

NOTES TO CHAPTER 17

1. JCS 713/4, 12 Mar. 1944.

2. JCS 742/5, 1 Apr. 1944.

3. Ltr., Maj. Gen. Willis H. Hale to Gen. H. H. Arnold, 5 Apr. 1944.

4. Memo for Marshall and King from Arnold, 16 Apr. 1944.

5. Ltr., Arnold to Nimitz, 20 Apr. 1944.

6. Ltr., Arnold to Maj. Gen. W. H. Frank, 20 Apr. 1944.

7. Frank Report, submitted by memorandum to Arnold by Frank, sub.: Conference with Commander-in-Chief, Pacific Ocean Areas, and the Joint Staff, 4 May 1944, with attached transcript of conference, Hq. CINCPOA, Pearl Harbor, 29 Apr. 1944.

8. Ltr., Nimitz to Arnold, 3 May 1944.

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92. TC-S-19-2, Norstad to Hansell, personal, 19 Dec. 1944.
93. TC-FN-21-1, Hansell to Arnold, 21 Dec. 1944.
94. 73d Bomb. Wg. CMR #14, 22 Dec. 1944.
95. USSBS, Mitsubishi, p. 137.
96. 73d Bomb. Wg. CMR #16, 27 Dec. 1944; USSBS, Nakajima, Diagram #4 (facing p. 120).
97. 73d Bomb. Wg. CMR #17, 3 Jan. 1945.
98. USSBS, The Effects of Air Attack on the City of Nagoya, p. 12.
99. 73d Bomb. Wg. CMR #18, 9 Jan. 1945; USSBS, Nakajima, p. 116 and Diagram #5 (facing p. 126).
100. 73d Bomb. Wg. CMR #19, 14 Jan. 1945; USSBS, Mitsubishi, p. 161.
101. USSBS, Kawasaki Aircraft Industries Co., Inc., pp. 1, 39–40.
102. 73d Bomb. Wg. CMR #20, 19 Jan. 1945.
103. USSBS, Kawasaki, pp. 46–53.
104. Ltr., Norstad to Hansell, 7 Dec. 1944.
105. [Draft] TC, Norstad to LeMay, 30 Dec. 1944, ordering him to Guam for meeting, 7–8 Jan. 1945.
106. TC-FN-6-4, Hansell to Arnold, 6 Jan. 1945; TC-FN-7-1, Hansell to Arnold, 7 Jan. 1945. The latter message indicates that Hansell already knew of his relief.
107. Ser. 080471Z, Hansell to Arnold, 8 Jan. 1945.
108. For an excellent report on the transfer, see St. Clair McKelway, "A Reporter with the B-29's," *New Yorker*, 16 June 1945, pp. 28–37. McKelway was PRO for XXI Bomber Command and talked to Hansell and Norstad during the crucial period.
109. Hist. XX BC, Jan. 1945, pp. 5, 15; TC-FN-09-9, Hansell to Harmon, 9 Jan. 1945.
110. TC-FN-19-3, Hansell to Arnold and Ramey, 19 Jan. 1945; TC-FN-19-17, LeMay to Arnold, 19 Jan. 1945.
111. Ltr., Hansell to Norstad, 2 Dec. 1944.

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112. Ltr., Hansell to Arnold, 14 Jan. 1945.
113. 73d Bomb. Wg. CMR #21, 23 Jan. 1945; USSBS, Mitsubishi, pp. 136–37.
114. 73d Bomb. Wg. CMR #22, 27 Jan. 1945.
115. TC-FN-29-1, LeMay to Arnold, 28 Jan. 1945.
116. TC-G-29-15, Norstad to LeMay, personal, 29 Jan. 1945. The target in question, Mitsubishi's No. 7 Airframe Works, was never completed and produced in 1944 only 286 Betty bombers (USSBS, Mitsubishi, pp. 195–97).
117. USSBS, Field Report Covering Air-Raid Protection and Allied Subjects in Kobe, pp. 1–2; 73d Bomb. Wg. TMR #26, 4 Feb. 1945.
118. Ltr., Arnold to Harmon, 16 Oct. 1944; CM-OUT-82189, Arnold to Richardson for Harmon, 26 Dec. 1944; ltr., S/W to Richardson and Harmon, 3 Jan. 1945.
119. Hq. AAFPOA and DC 20th AF, Rpt. #SC-SP-913, Analysis of XXI BC Operations, Oct. 1944 through May 1945, Table II.
120. *Ibid.;* 20th AF Stat. Sum. of Opns., pp. 76–77; Hist. XXI BC, Jan.–Feb. 1945, pp. 1–2.
121. Ser. 3013412, Hansell to Arnold, 30 Dec. 1944; 313th Bomb. Wg. CMR #1, 21 Jan. 1945; TC-G-29-15, Norstad to LeMay, personal, 29 Jan. 1945.
122. XXI BC TMR #26, 4 Feb. 1945.
123. USSBS, Effects of Air Attack on Osaka-Kobe-Kyoto, pp. 159–69.
124. USSBS, Nakajima, pp. 50–63.
125. XXI BC TMR #29, 10 Feb. 1945; USSBS, Nakajima, p. 64 and Diagram #1 (facing p. 78).
126. Hist. Air War POA, IV, 62–64; XXI BC TMR #29, 10 Feb. 1945; USSBS, Mitsubishi, pp. 137, 235.
127. USSBS, Nakajima, p. 102; USSBS, Japanese Aircraft Industry, p. 114.
128. XXI BC TMR #37, 19 Feb. 1945.
129. TC-G-12-3, Norstad to LeMay, 12 Feb. 1945.
130. TC-G-14-10 and TC-H-19-3, Arnold to Ramey, LeMay, and Harmon, 19 Feb. 1945.
131. TC-FN-22-6, LeMay to Arnold, 22 Feb. 1945. This choice was not in accord with the directive of 19 February which listed Hatsudoki as a visual target and, at Nagoya also, Mitsubishi's aircraft works and the Aichi Ordnance Plant as radar targets.
132. TC-FN-24-4, LeMay to Arnold, 24 Feb. 1945.
133. Hist. XXI BC, Jan.–Feb. 1945, p. 2.
134. Analysis of XXI BC Opns., Oct. 1944–May 1945, Table II; TC-FN-22-6, LeMay to Arnold, 22 Feb. 1945.
135. XXI BC TMR #38, 25 Feb. 1945.
136. USSBS, Effects of Air Attack on Urban Complex Tokyo-Kawasaki-Yokohama, p. 7.
137. TC-G-23-2, Norstad to LeMay, personal, 23 Jan. 1945.
138. XXI BC TMR #39, 4 Mar. 1945.
139. Hq. XXI BC, Phase Analysis Incendiary Operations, p. 3; USSBS, Nakajima, pp. 32, 102.
140. USSBS, Japanese Aircraft Industry, pp. 31–66 (including Fig. II-17 on p. 36).
141. 20th AF Stat. Sum. of Opns., pp. 17–21.
142. *Ibid.*, p. 23; USSBS, Strategic Air Operation . . . VHB, p. 11.
143. 20th AF Stat. Sum. of Opns., p. 31.
144. USSBS, Strategic Air Operation . . . VHB, p. 12.
145. *Ibid.*, p. 11.
146. 20th AF Stat. Sum. of Opns., pp. 21, 31.
147. *Ibid.*, p. 32.
148. Hq. XXI BC, Phase Analysis Incendiary Opns., p. 4.
149. *Ibid.;* USSBS, Strategic Air Operation . . . VHB, p. 11.
150. USSBS, Strategic Air Operation . . . VHB, p. 11.

NOTES TO CHAPTER 19

1. *Mission Accomplished: Interrogations of Japanese Industrial, Military, and Civil Leaders of World War II* (Washington, 1946), p. 18.
2. J. A. Isely and P. A. Crowl, *The U.S. Marines and Amphibious Warfare* (Princeton, 1951), p. 432.
3. USSBS, The Seventh and Eleventh Air Forces in the War against Japan [hereinafter cited USSBS, Seventh . . . against Japan], p. 9.
4. Data on AAFPOA operations will be found in the detailed study, History of the Air War in the Pacific Ocean Areas [hereinafter cited as Hist. Air War

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POA], Vol. III, chaps. XXIV–XXIX, and Vol. IV, chap. XXIX; and in the periodic histories of the Seventh Air Force and its major commands.

5. Hist. Air War POA, III, 18.

6. *Ibid.*, pp. 24–25.

7. *Ibid.*, p. 31 and Annex.

8. USSBS, Seventh . . . against Japan, p. 9; Hist. 30th Bomb. Gp., Aug. 1944; VII BC Mission Rpts. H-310, 311; Hist. Air War POA, III, chap. XVII. Dates given in the USSBS report are corrected by the more precise records of VII BC and AAFPOA.

9. USSBS, Seventh . . . against Japan, pp. 9–12.

10. Hist. Air War POA, III, 44–46; Hist. 333d Ftr. Sq., Nov. 1944.

11. TC-FN-27–3, Harmon for Hansell to Arnold, 270718Z Nov. 1944.

12. TC-FN-27–19, Harmon for Hansell to Arnold, 270718Z Nov. 1944.

13. Hist. Air War POA, III, 47.

14. TC-07-W, DC 20th AF to CG 20th AF, 072003Z Dec. 1944; TC-FN-07–29, XXI BC to CG 20th AF, 7 Dec. 1944.

15. Hist. Air War POA, III, 48; TC-FN-25–9, XXI BC to CG 20th AF, 25 Dec. 1944.

16. Hist. Air War POA, III, 49–50; Hist. 318th Ftr. Gp., Nov. 1944; Hist. 73d Bomb. Wg., Nov.–Dec. 1944.

17. CM-IN-WAR-56882–03RD, Arnold to Richardson, readdressed to AAFPOA for info., 031921Z Nov. 1944; Hist. Air War POA, III, 44–45.

18. TC-FL-07–18, XXI BC to DC 20th AF, 080042Z Nov. 1944; CM-OUT-9213, CG AAFPOA to CG POA, 12 Nov. 1944.

19. CM-IN-RJ-40308, Richardson POWAR to CG AAF, 210407Z Nov. 1944. On disagreement as to the best site on Saipan, see CM-IN-ISCOM, Saipan to COMFWDAREA and COMAIRFWD, 160525Z Nov. 1944.

20. TC-7-B, DC 20th AF to CG 20th AF, 270210Z, Nov. 1944.

21. TC-FN-10–25, DC 20th AF to CG AAF, 100918Z Dec. 1944; TC-28-B, DC 20th AF to CG 20th AF, 272348Z Nov. 1944.

22. Hist. Air War POA, III, 55, *n* 67.

23. CM-IN-WAR-56882–03RD, Arnold to Richardson, 031921Z Nov. 1944; CM-OUT-74052 (7 Dec. 44), Arnold to Harmon; CM-IN-WARX-69095, Arnold to Harmon, 272306Z Nov. 1944.

24. CM-IN-CINCPOA to CTF 94, 030340Z Dec. 1944. The radar was placed on Mt. Topotchau on 6 January (Hist. Air War POA, III, 45).

25. On their various targets, see Hq. 7th AF, Sum. 7th AF Opns., 16 Aug.–31 Dec. 1944, and USSBS, Seventh . . . against Japan, pp. 8–10.

26. Radg., CTF 95 to CINCPOA, 220121Z Nov. 1944; Hist. Air War POA, III, 115–16; AAF Eval. Bd. POA, Rpt. #5, 17 Jan. 1945; 1st ind. (ltr., Brig. Gen.. M. F. Scanlon to CG AAFPOA, 26 Jan. 1945), CG AAFPOA; USSBS, Seventh . . . against Japan, p. 9 (gives weight of attack on each target); Isely and Crowl, *U.S. Marines*, p. 437.

27. TC-FL-02–6, Hansell to Harmon, 3 Nov. 1944; XXI BC 0103, Hansell to Arnold, 3 Nov. 1944; radg., CINCPOA to CTF 94, 241855Z Nov. 1944.

28. USSBS, Seventh . . . against Japan, p. 10.

29. TC-01-R, DC 20th AF to XXI BC, info. CG 20th AF, 022024Z Dec. 1944; TC-01-R, DC 20th AF to XXI BC, 020219Z Dec. 1944; ser. 020356, CINCPOA to CTF 94, 2 Dec. 1944.

30. TC-12-B, DC 20th AF to CG 20th AF, 120150Z Dec. 1944.

31. TC-11–1, CG 20th AF to DC 20th AF, 1 Dec. 1944.

32. TC-FN-10–25, DC 20th AF to CG AAF, 100918Z Dec. 1944.

33. USSBS, Seventh . . . against Japan, p. 10; chronologies to Prelim. Hist. 7th AF, Dec. 1944, Jan.–Feb. 1945; Hist. Air War POA, III, 127–60; AAF Eval. Bd. POA, Rpt. #7, 10 Jan. 1945.

34. Hist. Air War POA, III, Annex to p. 129 and pp. 143–50, 159; AAF Eval. Bd. POA, Rpt. #7.

35. Hist. Air War POA, III, 160–73 and Annex to p. 162.

36. *Ibid.*, Annex to p. 162.

37. USSBS, Seventh . . . against Japan, pp. 8–15; USSBS, Reduction of Truk, pp. 15–16; Hist Air War POA, III, 80–96 and Annex to p. 82; Hist. 7th AF, 1 Apr.–14 July 1945, pp. 35–43.

38. Hist. 11th Bomb. Gp., Nov.–Dec. 1944 and Jan.–Feb. 1945; AAF Eval. Bd. POA, Rpt. #5, 17 Jan. 1945, pp. 8–14.

39. Ltr., CTF 93 to CNO, 24 Feb.

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1945; Hist. Air War POA, III, Annex, p. 123.

40. Memo for Rear Adm. D. B. Duncan *et al.* from Col. R. C. Lindsay, 13 May 1944.

41. Memo for Col. J. L. Loutzenheiser from Kuter, 16 May 1944.

42. Notes on JPS 152d Mtg., 17 May 1944.

43. Memo for JPS from CG 20th AF, 14 July 1944.

44. Memo for Rear Adm. D. B. Duncan *et al.* from C. H. Donnelly, Sec. to JPS, 21 July 1944.

45. Ltr., Hansell to Harmon, 28 July 1944.

46. Memo for C/AS from AC/AS OC&R, 4 Oct. 1944; JCS 713/18, 2 Oct. 1944; JCS 713/19, 3 Oct. 1944; JCS 180th Mtg., 3 Oct. 1944.

47. Isely and Crowl, *U.S. Marines,* p. 434 and *n* 4.

48. CINCPOA, Joint Staff Study, DETACHMENT, 7 Oct. 1944; Holland M. Smith and Percy Finch, *Coral and Brass* (New York, 1949), p. 242.

49. CINCPOA, ser. 0001027, Opn. Plan #11–44, 25 Nov. 1944; USSBS, Campaigns of the Pacific War, p. 322.

50. TC-31-C, DC 20th AF to CG 20th AF, 31 Oct. 1944; ltr., Norstad to Harmon, 7 Dec. 1944; Hist. Air War POA, II, 361–68.

51. CINCPOA, ser. 0001027, Opn. Plan #11–44, 25 Nov. 1944; COM5THFLT, ser. 00040, Opn. Plan #13–44, 31 Dec, 1944; Isely and Crowl, *U.S. Marines,* pp. 436–46; Smith and Finch, *Coral and Brass,* pp. 244–48; R. E. Appleman *et al., Okinawa: The Last Battle* (Washington, 1948), p. 28.

52. Opn. Plan #13–44, 31 Dec. 1944.

53. *Ibid.,* G-2 Situation Map I, 19 Feb. 1944; CINCPOA ser. 000885, Plan for Establishment of WORKMAN Base, 11 Oct. 1944 with changes thereto.

54. Opn. Plan #13–44, 31 Dec. 1944. On the fighter groups, see Hq. VII FC, Conversion to VLR Fighter Operations: Difficulties Encountered and Their Solution, 15 Aug. 1945.

55. Instances have been cited in foregoing chapters both for XX BC and XXI BC. Another case in point was now under discussion, a request by MacArthur for a strike against Okinawa airfields: TC-G-10–3, CG 20th AF to CG XXI BC, Combs to Hansell, 10 Jan. 1945; TC-FN-12–30, CG XXI BC to CG 20th AF, 12 Jan. 1945.

56. TC-FN-14-A, DC 20th AF to CG XXI BC, 14 Jan. 1945; TC-FN-24–49, CG XXI BC to CG and DC 20th AF, 24 Jan. 1945; TC-FN-30–9, CG XXI BC to DC 20th AF, 30 Jan. 1945; TC-01-A, DC 20th AF to CG 20th AF, 1 Feb. 1945; TC-G-1–7, CG 20th AF to CG XXI BC, n.d.

57. Hist. Air War POA, III, 151–56.

58. XXI BC, Consolidated Stat. Sum. of Combat Opns., Mission 31, 12 Feb. 1945.

59. Hist. Air War POA, III, 151–56; Isely and Crowl, *U.S. Marines,* pp. 437–38; ltr., Harmon to Maj. Gen. R. W. Douglass, 10 Jan. 1945.

60. USSBS, Nakajima Aircraft Co., Ltd., p. 36; Isely and Crowl, *U.S. Marines,* pp. 446–48; XXI BC TMR #34, 15 Feb. 1945.

61. Isely and Crowl, *U.S. Marines,* pp. 464–67; AAF Eval. Bd. POA, Rpt. #7, pp. 39–40; Hist. Air War POA, III, 157.

62. AAF Eval. Bd. POA, Rpt. #7, p. 41; Hist. Air War POA, III, 157–58; Isely and Crowl, *U.S. Marines,* pp. 467–71.

63. Isely and Crowl, *U.S. Marines,* pp. 471–75.

64. AAF Eval. Bd. POA, Rpt. #7, pp. 44–45; Hist. Air War POA, III, 157–58; Isely and Crowl, *U.S. Marines,* pp. 475–77.

65. Isely and Crowl, *U.S. Marines,* pp. 477–82.

66. *Ibid.,* pp. 483–501; Smith and Finch, *Coral and Brass,* pp. 254–74.

67. USSBS, Campaigns of the Pacific, p. 321; AAF Eval. Bd. POA, Rpt. #7, pp. 44–45.

68. AAF Eval. Bd. POA, Rpt. #7, pp. 24, 41, 55–69.

69. Marine officers estimated that of 915 first and second priority positions, only 194 were destroyed by Blandy's forces; Isely and Crowl, *U.S. Marines,* p. 473 and *n* 78.

70. Hist. Air War POA, III, 158.

71. CTU 94.3.1, MO 1, 4 Mar. 1945; MO 2, 7 Mar. 1945; radg., CTF 51 to CTG 56.1, 061200Z Mar. 1945; radg., CG LANFOR to CTF 51, 082117Z Mar. 1945; radg., LANFOR to CTG 51.2, 091715Z Mar. 1945; CINCPAC-CINCPOA ser.

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0005564, 18 Mar. 1945; AAF Eval. Bd. POA, Rpt. #7, pp. 50, 68; ltr., V Amph. Corps, 14 Mar. 1945, Doc. 226, Hist. VII FC, Feb.-Mar. 1945; Isely and Crowl, *U.S. Marines*, pp. 505–11.

72. Radg., CG EXTROPAC to COMJTEXFOR, 070030Z Mar. 1945; Hq. VII FC A-2, A-3 Daily Sum., 10 Mar. 1945; radg., COMFWDAREA to ISCOMs Tinian and Saipan, 150635Z Mar. 1945; Hist. VII FC, Apr.–June 1945, pp. 1–2.

73. Hist. VII FC, July–Aug. 1945, p. 52; Hq. VII FC, Air Raid Rpts., 24 May, 4 June, 28 June 1945; Hist. Air War POA, IV, sec. 2, p. 17.

74. Hist Air War POA, III, 121 and IV, 18–22; AAF Eval. Bd. POA, Rpt. #7, p. 50; VII FC Mission Rpt. 18, n.d.

75. Radg., CTF 93 to CG 7th AF, 311223A Mar. 1945; radg., COMFWDAREA to COMAIRIWO, 201049Z Apr. 1945; 20th AF, Stat. Sum. of Opns. against Japan, p. 56.

76. *Building the Navy's Bases in World War II* (Washington, 1947), II, 370–71; 18th Hist. Unit, Hist. of VHB Construction in the Marianas and on Iwo Jima, p. 151.

77. CINCPOA ser. 00885, Plan for . . . WORKMAN, 11 Oct. 1944; ser. 000222, Change #3 to WORKMAN, 11 Feb. 1945; interview, 18th Hist. Unit with Maj. Louis C. Sorleau, 11 May 1945.

78. *Building the Navy's Bases*, II, 370–71; Daily Diary, Office of the Island Engr., APO 86; USSBS, Strategic Air Operation . . . VHB, pp. 22–23; radg., ISCOM Iwo to CG AAFPOA, 17 Mar. 1945.

79. Hist. VHB Construction . . . Iwo Jima, pp. 152–55.

80. *Ibid.*, pp. 155–58; Daily Diary . . . Island Engr., APO 86; R/S, Maj. Henry E. Williams to DC/S Plans, XXI BC, 10 June 1945.

81. *Building the Navy's Bases*, II, 371–72.

82. Smith and Finch, *Coral and Brass*, pp. 236–37.

83. USSBS, Campaigns of the Pacific War, p. 323.

84. USSBS, Strategic Air Operation . . . VHB, p. 23.

85. *Ibid.*, pp. 22–23.

86. Smith and Finch, *Coral and Brass*, p. 241, citing an unnamed AAF source.

87. Adm. Ernest J. King. "Third Official Report, Dec. 8, 1945, to the Secretary of the Navy," in *The War Reports of . . . Marshall . . . Arnold . . . King*, p. 662.

88. For SEAC Missions, see Vice Adm. The Earl Mountbatten of Burma, *Report to the Combined Chiefs of Staff by the Supreme Allied Commander, South-East Asia, 1943–45* (New York, 1951), p. 94 and above, pp. 97, 110; for China missions, see Theodore Roscoe, *United States Submarine Operations in World War II* (Annapolis, 1949), p. 470. For a summary of ASR activities for XXI BC, see Hist. Air War POA, chap. XL.

89. USSBS, Strategic Air Operation . . . VHB, p. 23; ltr., Capt. H. R. Horney, USN, Comdr. ASR Gp., FWDAREA, to COMAIRFORCE, Pacific Fleet, 28 Mar. 1945.

90. JCS 742/6, 6 Apr. 1944; USSBS, Strategic Air Operation . . . VHB, pp. 23–24; draft ind. (ltr., CG AAFTC to CG XXI BC, 31 Mar. 1945), CG XXI BC to CG AAF Tactical Center, n.d.; Roscoe, *Submarine Operations*, p. 471.

91. Memo for C/S XXI BC from Lt. George C. McGhee, USNR, Naval Liaison Off., n.d.

92. Roscoe, *Submarine Operations*, p. 471; 73d Bomb. Wg. TMR #5, 8 Nov. 1944; Rpt. on Ditching of B-29 #42–24625, Mission #5, 8 Nov. 1944.

93. 73d Bomb Wg. CMR #7, 24 Nov. 1944.

94. Hq. AAFPOA, Analysis of XXI BC Opns., Oct. 1944 thru May 1945, Rpt. #SC-SP-913, Table III; memo for Dir. of Opns. XXI BC from Capt. H. M. Clifford, 1 Mar. 1945.

95. R/S, Col. D. E. Wilson, A-3 XXI BC to OAS, attn. Dr. Longbridge, 13 Jan. 1945.

96. Ltr., Hansell to Arnold, 14 Jan. 1944.

97. *Ibid.*; ltr., LeMay to Arnold, 3 Feb. 1945; 20th AF, Sum. of Opns. against Japan, p. 85; 73d Bomb. Wg. CMR #20, 19 Jan. 1945 and #21, 23 Jan. 1945.

98. Hist. XX BC Fourth Phase, Hist. Study #8, "Double-Strike: Palembang-Nagasaki," supporting documents: Notes on Air-Sea Rescue; TC-E-1020, Kharagpur-Washington, 13 Nov. 1944; TC-G-23-4, Arnold to LeMay, 232631Z Jan.

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1945; XXI BC TMR #263–67, 12 July 1945, citing 315th Bomb. Wg. ASR Rpt. #1.

99. TC-FN-01–1, LeMay to Arnold, 010008Z Feb. 1945.

100. See, e.g., 313th Wing Training Program, Indoctrination School, 23 June 1945; XXI BC TMR #263–67, 12 July 1945, citing 315th Bomb. Wg. ASR Rpt. #1.

101. Rpt. on Ditching B-29 #42–24625, 8 Nov. 1944.

102. XXI BC TMR #263–67, citing 58th Bomb. Wg. ASR Rpt. #5.

103. Memo for Dir. of Opns. from Clifford, 1 Mar. 1945.

104. TC-BM-13–22–20, Hansell to Harmon, 20 Dec. 1944; ltr., Hansell to Arnold, 14 Jan. 1945; Roscoe, *Submarine Operations*, p. 472; 73d Bomb. Wg. CMR #13, 18 Dec. 1944.

105. Ser. 23211, COMSUBPAC to CTG 17.7, 23 Dec. 1944; min. ASR mtg., 5 May 1945; Incl. A. Com.ASRTG Forward Area, ser. 026, 23 Apr. 1945.

106. Roscoe, *Submarine Operations*, p. 472.

107. Richard Tregaskis, "Road to Tokyo," *Saturday Evening Post*, 25 Aug. 1945, p. 91. This is from a series of articles by the celebrated correspondent who went out with a B-29 crew from Kansas to Japan; it gives an intimate view of the life of a "typical" combat team. For ASR practise in life rafts, see the issue of 15 Sept. 1945, p. 182.

108. Roscoe, *Submarine Operations*, p. 472; ser. 260855, CINCPOA Adv. Hq. to COM5THFLT, 26 Feb. 1945.

109. Memo for C/S XXI BC from Col. W. H. Blanchard, A-3, 5 Mar. 1945.

110. Ltr., Capt. H. R. Horney to COMAIRFORCE, Pacific Fleet, 28 Mar. 1945, ser. 026 (23 Apr. 45). XXI BC TMR #234–37, 28 June 1945, reports a Navy Dumbo patrolling the area 31°N 135° 30'E and subsequent reports show many in the neighborhood.

111. R/S, Col. J. B. Montgomery, DC/S Opns. XXI BC to A-3, 3 Apr. 1945; R/S, Col. William H. Blanchard, A-3 to DC/S Opns., 8 Apr. 1945; USSBS, Strategic Air Operation . . . VHB, p. 24; R/S, Capt. H. M. Clifford, ASRO XXI BC to A-3, 19 Apr. 1945.

112. R/S, Clifford to A-3, 19 Apr. 1945; R/S, ltr., Lt. Col. James W. Guthrie, Dir. of Opns. XXI BC to A-3, 18 Apr. 1945; memo for Dir. of Opns. from Clifford, 1 Mar. 1945; Ernie Pyle, *Last Chapter* (New York, 1946), p. 32.

113. USSBS, Strategic Air Operations . . . VHB, p. 24.

114. Roscoe, *Submarine Operations*, p. 473.

115. Sum. of 20th AF Opns., 5 June 1944–14 Aug. 1945; 20th AF, Stat. Sum. of Opns. against Japan, p. 25, gives slightly different figures.

116. 20th AF, Stat. Sum., of Opns. against Japan, p. 90; memo for Dir. of Opns. from Clifford, 1 Mar. 1945.

117. A few of these reports have been utilized in published works. See, e.g., Roscoe, *Submarine Operations*, pp. 473–74; Vern Haugland, *The AAF against Japan* (New York, 1948), pp. 359–61 and chaps. XXIII, XXIV, *passim*.

118. Merle Miller and Abe Spitzer, *We Dropped the Atom Bomb* (New York, 1946), p. 86.

NOTES TO CHAPTER 20

1. St. Clair McKelway, "A Reporter with the B-29's," *New Yorker* (23 June 1945), p. 27.

2. TC FN-13–15, XXI BC to CG 20th AF, 13 Dec. 1944; TC S-13–15, CG 20th AF to XXI BC, 13 Dec. 1944; TC FN-14–15, XXI BC to CG 20th AF, 14 Dec. 1944; TC FN-14–9, XXI BC to CG 20th AF, 14 Dec. 1944; TC FN-15-D, DC 20th AF to XXI BC, 15 Dec. 1944; TC FN-15–7, XXI BC to DC 20th AF, 15 Dec. 1944; TC FN-16–4, XXI BC to CG 20th AF, 16 Dec. 1944; TC FN-18–1, XXI BC to CG 20th AF, 18 Dec. 1944; TC FN-21–6, XXI BC to CG 20th AF, 21 Dec. 1944; TC FN-23–11, XXI BC to DC 20th AF, 23 Dec. 1944; TC FN-25–3, XXI BC to CG 20th AF, 25 Dec. 1944; TC FN-26–11, XXI BC to CG 20th AF, 26 Dec. 1944; and cf. above, p. 102 for XX BC.

3. Ltr., Hansell to Norstad, 2 Dec. 1944; TC FN-19–7, XXI BC to CG 20th AF, 19 Dec. 1944; ltr., Hansell to Arnold, 14 Jan. 1945.

4. Ltr., Kenney to Arnold, 6 Nov. 1943, attached memo for S/AS from Echols, n.d.; R&R, Giles to Vandenberg, 7 Feb. 1944; memo for Arnold from Col.

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Emmet O'Donnell, 7 Feb. 1944; R&R, OC&R Requirements Div. to AC/AS OC&R, n.d.

5. Ltr., Hansell to Norstad, 2 Dec. 1944; ltr., Hansell to Arnold, 14 Jan. 1945.

6. AC/AS Plans, Division Digest, 31 Mar. 1943.

7. *Ibid.*, 10 May 1943; memo for Kuter from Col. Wm. C. Bentley, 15 Oct. 1943; 20th AF, Brief Sum. of B-29 Strat. Air Opns., 5 June–14 Aug. 1945, p. 58.

8. AC/AS Plans, DAR, 12 May 1944.

9. Rpt. of the COA on Economic Objectives in the Far East, 11 Nov. 1943.

10. Rpt. to COA, Economic Effects of Successful Area Attacks on Six Japanese Cities, 4 Sept. 1944; memo for Arnold from Norstad, 16 Sept. 1944; COA, Revised Rpt., 10 Oct. 1944. For a critical estimate of the COA's decisions, see Maj. Philip G. Bower, memo for "Topside Eyes Only," Estimate of the Pacific Situation and 20th AF Target Policy, 15 Feb. 1945.

11. Air Estimate and Plans for 20th AF Opns., Nov. 1944 to Jan. 1945 Inclusive, incl. 1 to ltr., Norstad to Hansell, 18 Nov. 1944.

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13. Memo for Col. Lindsay from Col. Guido R. Perera, 8 June 1944.

14. Memo for Posey from Bower, 16 Jan. 1945.

15. Memo for Posey from Bower, 13 Jan. 1945; R&R, JTG to Norstad, 10 Feb. 1945.

16. TC G-14-10 and H-19-3, CG 20th AF to XX BC, XXI BC, and DC 20th AF, 19 Feb. 1945.

17. Radg. AIDCO 0710, LeMay to Harmon, 12 Mar. 1945.

18. Memo for C/S from Col. J. B. Montgomery, 10 Mar. 1945, and incl. 1, 33d SCU, XXI BC, Bombing Accuracy on Japanese Mainland Missions.

19. Hq. XXI BC, Phase Analysis: Incendiary Opns., p. 6 (this is a thorough and objective study of the subject by the DC/S, Opns., upon which much of this chapter is based); TC FN-23-1, LeMay to Arnold, 222359Z Jan. 1945.

20. 20th AF, A Stat. Sum. of Its Opns. against Japan, pp. 23, 85; XXI BC, TMR #39, 4 Mar. 1945.

21. XXI BC, Phase Analysis: Incendiary Opns.

22. TC-E-130, Kharagpur-Washington, 4 Aug. 1944; Hist. XX BC, 4th Phase, Study #9, Yawata II, pp. 4–5. In December 1944 Hansell had stripped his F-13's of all armament except the tail turret; at extreme altitudes they were rarely intercepted and the change gave them greater range (TC FN-06-19, 6 Dec. 1944).

23. XXI BC, Phase Analysis: Incendiary Opns.

24. For a penetrating and sympathetic treatment of the personal elements involved, see St. Clair McKelway, "A Reporter with the B-29's," *New Yorker* (23 June 1945), pp. 30–36.

25. TC FN-08-6, LeMay to Arnold, 081520Z Mar. 1945.

26. XXI BC, TMR #40, 9 Jan. 1945.

27. Msg. 0503, LeMay to Arnold, 9 Mar. 1945; TC FN-09-03, Norstad to Arnold for Spence, 090400Z Mar. 1945.

28. XXI BC, TMR #40, 9 Jan. 1945.

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30. Incendiary Bomb Attacks, pp. 68–70.

31. McKelway, pp. 36–38.

32. XXI BC, TMR #40, 9 Jan. 1945; USSBS, Japanese Air Power, p. 26.

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34. XXI BC, CIU, Damage Assessment Rpt. #20, 20 Mar. 1945; Incendiary Bomb Attacks, p. 94.

35. Incendiary Bomb Attacks, pp. 67–68.

36. USSBS, Field Report Covering Air Raid Protection and Allied Subjects, Tokyo, Japan, a detailed description of 222 pages based on a survey made in Nov. 1945.

37. *Ibid.*, pp. 58–63, 83, 173; Incendiary Bomb Attacks, pp. 94–102. Some of the gruesome photographs in this volume give an idea of the horror of the attack.

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41. XXI BC, TMR #41, 11 Mar. 1945.

42. *Ibid.;* XXI BC, Phase Analysis: Incendiary Opns., p. 38.

43. Radg., CINCPAC to XXI BC, 130026Z Mar. 1945; XXI BC, TMR #41, 11 Mar. 1945; Incendiary Bomb Attacks, pp. 227–31.

44. XXI BC, TMR #41, 11 Mar. 1945; USSBS, Aichi Aircraft Company, pp. 23, 29.

45. Incendiary Bomb Attacks, pp. 231–34.

46. XXI BC, Phase Analysis: Incendiary Opns., pp. 23–25.

47. XXI BC, TMR #41, 11 Mar. 1945; TC FN-25–6, LeMay to Arnold, 251010Z Mar. 1945; 20th AF, Stat. Sum. Opns. against Japan, p. 85.

48. USSBS, Effects of Air Attack on Osaka-Kobe-Kyoto [hereinafter cited Osaka-Kobe-Kyoto], pp. 15–24, 87–88, 118–19; USSBS, Field Report Covering Air Raid Protection and Allied Subjects in Osaka, Japan, p. 1.

49. XXI BC, TMR #42, 13 Mar. 1945; XXI BC, Phase Analysis: Incendiary Opns., p. 27.

50. XXI BC, TMR #42, 13 Mar. 1945.

51. *Ibid.;* 20th AF, Stat. Sum. Opns. against Japan, p. 85; USSBS, Field Report . . . Osaka, Japan, pp. 2, 111–13; USSBS, Osaka-Kobe-Kyoto, p. 26.

52. XXI BC, TMR #42, 13 Mar. 1945; TC FN-28–9, LeMay to Arnold, 281016Z Mar. 1945.

53. USSBS, Osaka-Kobe-Kyoto, pp. 149–56.

54. XXI BC, Phase Analysis: Incendiary Opns., p. 28; XXI BC, TMR #43, 16 Mar. 1945.

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57. USSBS, Field Report Covering Air-Raid Protection and Allied Subjects in Kobe, Japan; USSBS, Osaka-Kobe-Kyoto, p. 159.

58. XXI BC, Phase Analysis: Incendiary Opns., p. 28; USSBS, Field Report . . . Kobe, pp. 2, 105–6; USSBS, Osaka-Kobe-Kyoto, pp. 159–62. There is some variation in the figures given on industrial structures destroyed in the two USSBS reports, perhaps because of a difference in classifying some of the home industry establishments.

59. XXI BC, TMR #44, 18 Mar. 1945; USSBS, Incendiary Bomb Attacks, p. 231; 20th AF, Stat. Sum. Opns. against Japan, p. 85; USSBS, Mitsubishi Heavy Industries, Ltd.

60. McKelway, p. 36.

61. USSBS, Strat. Air Opn. . . . VHB, p. 12.

62. XXI BC, Phase Analysis: Incendiary Opns., pp. 39–41.

63. TC G-28–9, Arnold to LeMay, 282249Z Mar. 1945; ltr., Combs to Hansell, 28 Mar. 1945.

64. Memo for LeMay from Arnold, 29 Mar. 1945.

65. USSBS, Strat. Air Opn. . . . VHB, p. 13.

66. TC G-3–4, Arnold to LeMay, 3 Apr. 1945, relaying TC G-28–11, 28 Mar. 1945.

67. TC FN-25–11, LeMay to Norstad, 25 Apr. 1945; memo for Norstad from Combs, 10 Apr. 1945.

68. TC FN-13–12, LeMay to Arnold, 13 Apr. 1945.

69. TC FN-25–11, LeMay to Norstad, 25 Apr. 1945.

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71. R. E. Appleman *et al., Okinawa: The Last Battle, U.S. Army in World War II* (Washington, 1948), pp. 1–4.

72. CINCPOA, Joint Staff Study, ICEBERG, pp. 1–4.

73. USSBS, Japanese Air Power, pp. 18, 22–24, 60–69.

74. Hq. AAFPOA GO 32, 4 Nov. 1944; CM-IN-4769, MacArthur to Marshall, 5 Nov. 1944; CM-IN-8772, Nimitz to JCS, 9 Nov. 1944; CM-IN-11098, MacArthur to Marshall, 12 Nov. 1944; CM-OUT-64114, Marshall to MacArthur, Nimitz *et al.*, 17 Nov. 1944; CM-OUT-

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64579, Arnold to MacArthur, Nimitz, Wedemeyer, Sultan, and Harmon, 17 Nov. 1944.

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76. CM-IN-23407, Harmon to Nimitz, 23 Feb. 1945; CM-IN-26729, Nimitz to Harmon, 26 Feb. 1945; CM-IN-26749, Harmon to LeMay, 26 Feb. 1945.

77. Radg. AIDCO 0710, LeMay to Harmon, 12 Mar. 1945.

78. TC FN-13–19, LeMay to Arnold, 13 Mar. 1945.

79. TC G-15–3-H, Arnold to LeMay, 15 Mar. 1945; TC G-15-5-H, Arnold to LeMay, 15 Mar. 1945.

80. TC G-17–11-H, Arnold to LeMay, 18 Mar. 1945.

81. TC G-31–2, Norstad to LeMay, 31 Mar. 1945.

82. Appleman *et al., Okinawa,* pp. 27–62; USSBS, Campaigns of the Pacific War, pp. 324–25.

83. 20th AF, Stat. Sum. Opns. against Japan, p. 85; XXI BC, TMR #46, 27 Mar. 1945; XXI BC Command Book, 1 Aug. 1945, p. 23.

84. 20th AF, Stat. Sum. Opns. against Japan, p. 85.

85. XXI BC, TMR #50, 31 Mar. 1945.

86. Appleman *et al., Okinawa,* pp. 63–83.

87. XXI BC, TMR #51, 1 Apr. 1945.

88. USSBS, Campaigns of the Pacific War, pp. 327–28, 332–38; USSBS, Japanese Air Power, p. 66; Appleman *et al., Okinawa,* pp. 97–99. Statistics for this attack and in the over-all summary are taken from the USSBS reports, which are based on postwar researches in Japan, rather than from Appleman, who follows early operational reports of CINCPAC-CINCPOA.

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90. See the two USSBS reports cited in note 88.

91. TC G-16–7, Norstad to LeMay, 17 Apr. 1945; TC G-27–21, Norstad to LeMay, 28 Apr. 1945; TC G-5–25, Norstad to LeMay, 5 May 1945.

92. 20th AF, Stat. Sum. Opns. against Japan, p. 7.

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94. 20th AF, Phase Analysis: ICEBERG Support Opns., p. 7.

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96. Generalizations based on XXI BC TMR Nos. 70–95, 127–38, 140–45, 147–49, 151–62, 167–71.

97. 20th AF, Stat. Sum. Opns. against Japan, pp. 85–87.

98. Hist. XXI BC, May 1945, p. 3; memo for Col. Jas. D. Garcia from Maj. Chas. T. Kingston, Jr., 19 July 1945.

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101. VII FC, MR Nos. 126, 130, 132, 19, 22, 26 Apr. 1945.

102. 20th AF, Stat. Sum. Opns. against Japan, p. 60.

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and Allied Subjects in Japan, p. 236); other Japanese sources give 2,459 for the 13th and 841 for the 15th (USSBS, Field Report Covering Air-Raid Protection and Allied Subjects, Tokyo, p. 173).

108. Memo for Norstad from Combs, Recommended Intensification of Attack on Japan Immediately Following V-E Day, 10 Apr. 1945; TC G-12-10-H, Arnold to LeMay, 12 May 1945.

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110. See sources in n. 109.

111. XXI BC, TMR #176, 16 May 1945.

112. *Ibid.;* USSBS, Mitsubishi, p. 235.

113. USSBS, The Effects of Air Attack on the City of Nagoya, p. 2.

114. Radg. 160916Z, CINCPOA Advon to CTF 58, CTF 93, 16 Mar. 1945; TC G-19-5-H, CG 20th AF to CG XXI BC, 19 Mar. 1945.

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123. XXI BC, TMR #187, 1 June 1945; USSBS, Field Report . . . Osaka, Japan, pp. 2, 112; USSBS, Osaka-Kobe-Kyoto, p. 26.

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125. JTG, Air Target Intel., Index, Vol. I, File #51, 498–99; USSBS, Effects of 2,000-, 1,000-, and 500-Pound Bombs on Japanese Targets, p. 157–235.

126. XXI BC, TMR #189, 7 June 1945; VII FC, unnumbered MR, 6 [*sic*] June 1945; USSBS, Osaka-Kobe-Kyoto, pp. 31–36.

127. JTG, Air Target Intel., Index, Vol. I, File #51, 499.

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133. *Mission Accomplished,* p. 29.

134. Joseph C. Grew, *Turbulent Era: a Diplomatic Record of Forty Years, 1905–45,* ed. Walter Johnson (2 vols.; New York, 1952), II, 1421–24.

135. USSBS, The Effects of Strategic Bombing on Japanese Morale, pp. 18–22.

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NOTES TO CHAPTER 21

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3. TC G-16-7, Arnold to LeMay, 162255Z Mar. 1945.

4. Hist. XXI BC, Apr. 1945, pp. 3–7.

5. TMR #45, 24 Mar. 1945 (all TMR's cited in this chapter were issued by XXI BC); 20th AF, Stat. Sum. Opns. against Japan, pp. 85–87; ltr., Combs to Hansell,

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6. TMR #48, 30 Mar. 1945; USSBS, Mitsubishi, pp. 58–60.

7. TMR #51, 1 Apr. 1945; USSBS, Nakajima Aircraft Co., Ltd., p. 36.

8. TMR Nos. 55–57, 3 Apr. 1945; USSBS, Nakajima, p. 36; USSBS, Mitsubishi, p. 58; USSBS, Tachikawa Aircraft Co., p. 9.

9. Hist. XXI BC, Apr. 1945, pp. 5–6.

10. TMR #59, 7 Apr. 1945.

11. USSBS, Mitsubishi, pp. 141, 152.

12. TMR Nos. 58, 7 Apr. 1945, and 63, 12 Apr. 1945; USSBS, Nakajima, pp. 36, 116, and Plots 1 and 2 facing; JTG, Air Target Intel., Japanese War, Index, Vol. I, File #51, 467.

13. USSBS, Nakajima, pp. 102, 116.

14. VII FC, CMR #102, 12 Apr. 1945; TMR #63, 12 Apr. 1945.

15. TMR Nos. 64, 65, 12 Apr. 1945; USSBS, Chemicals in Japan's War, pp. 5, 63–67, 95–97.

16. TMR #96, 24 Apr. 1945; USSBS, Hitachi Aircraft Co., pp. 48, 55, 62.

17. TMR #126, 30 Apr. 1945.

18. TMR #146, 5 May 1945; USSBS, Army Air Arsenals and Navy Air Depots, pp. 16, 22.

19. TMR #172, 11 May 1945; USSBS, Kawanishi Aircraft Co., pp. 46–62.

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23. Hist. Air War POA, IV, 163; TMR #191, 9 June 1945.

24. TMR Nos. 191-93, 9 June 1945; USSBS, Kawanishi Aircraft Co., pp. 21–26; USSBS, Aichi Aircraft Co., pp. 43–44; USSBS, Kawanishi Aircraft Industries Co., Inc., p. 46.

25. TMR Nos. 196–200, 10 June 1945; USSBS, Nippon Airplane Co., p. 5; USSBS, Hitachi, pp. 20–21; USSBS, Army Air Arsenals and Navy Air Depots, p. 48; VII FC, CMR #180, 10 June 1945.

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28. USSBS, Kawasaki Aircraft Industries Co., Inc., p. 21.

29. USSBS, Kawanishi Aircraft Co., p. 65.

30. USSBS, Mitsubishi, p. 201.

31. USSBS, Kawasaki Aircraft Industries Co., Inc., p. 21.

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33. USSBS, Kawasaki Aircraft Industries Co., Inc., p. 46; USSBS, Effects of the 4,000-Pound Bomb on Japanese Targets, p. 9; USSBS, Aichi Aircraft Co., p. 29.

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35. Hist. Air War POA, IV, 168–70.

36. TMR Nos. 284–90, 24 July 1945.

37. USSBS, Sumitomo Metal Industries, Propeller Div., p. 7.

38. USSBS, Kawanishi, p. 79 and App. G, p. 88.

39. USSBS, Effects of 2,000-, 1,000-, and 500-Pound Bombs on Japanese Targets, p. 159.

40. USSBS, Aichi, p. 96.

41. USSBS, Nakajima, p. 132.

42. Details on tactical improvements may be found in the TMR's and are summarized in Hist. Air War POA, IV, chap. xxv, *passim.*

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45. TMR Nos. 206–9, 17 June 1945; AMS Maps, Southern Japan, Central Japan.

46. TMR Nos. 206–9; USSBS, Report on Physical Damage in Japan [hereinafter cited Physical Damage], pp. 36–37.

47. See TMR Nos. 210–12, 19 June 1945; 234–37, 28 June; 240–43, 1 July; 247–50, 3 July; 251–55, 6 July; 257–60, 9 July; 263–66, 12 July; 271–74, 16 July; 277–80, 19 July; 293–95, 26 July; 297–302, 28 July; 306–9, 1 Aug.; 312–16, 5 Aug.; 319–20, 6 Aug.; 321–23, 8 Aug.; 325–30, 14 Aug. On target selection, see especially the "Strategy and Plans" section in each.

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52. TMR #319, 6 Aug. 1945; USSBS, Physical Damage, pp. 36–37.
53. 301st Ftr. Wg., CMR, 9 Aug. 1945; TMR #319.
54. AC/AS A-2, 20th AF, Flak Intel. in the Pacific, 29 July 1945.
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57. CM-IN-AIBGI 1253, XXI BC to WD, CG 20th AF to CG USASTAF, 16 July 1945.
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64. USSBS, Strat. Air Opn. . . . VHB, pp. 14–15.
65. USSBS, Effects of Air Attack on Japanese Urban Economy, pp. 3, 11.
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67. JCS 1190/2, 26 Dec. 1944; AAF Official Station List, 1 June 1945.
68. TMR Nos. 232, 26 June 1945; 238, 29 June 1945; 245, 2 July 1945; USSBS, Strat. Air Opn. . . . VHB, p. 22.
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70. R&R, Col. J. D. Garcia, A-2 XXI BC to A-3, 6 July 1945.
71. USSBS, Oil in Japan's War, *passim;* USSBS, Sum. Rpt. (Pacific War), p. 15. For Germany, consult the index of Vol. III of this series, s.v. "Oil campaign."
72. TC 9026, Arnold to LeMay, 100010Z Jan. 1945; memo for Kuter from Kissner, 22 June 1945; TC 0144, Giles to Spaatz, 14 July 1945; TC 17–11, Spaatz to Giles, 17 July 1945.
73. Radg. 0423, Giles to Spaatz, 190803Z July 1945.
74. TC 17–11, Spaatz to Giles, 17 July 1945.
75. TC FN-09–11, LeMay to Norstad, 10 May 1945.
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77. TMR #218, 22 June 1945.
78. The primary sources are the TMR's numbered as follows: 232, 26 June 1945; 238, 29 June; 245, 2 July; 255, 6 July; 261, 9 July; 267, 12 July; 270, 15 July; 281, 19 July; 283, 22 July; 291, 25 July; 303, 28 July; 310, 1 Aug.; 315, 5 Aug.; 322, 9 Aug.; 328, 14 Aug. The 315th Bomb. Wing's study "Fifteen Oil Missions" is an excellent summary; there is an account of each mission in Hist. Air War POA, IV, 177–83. Results are tabulated in USSBS, Oil in Japan's War, App.
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80. USSBS, Oil in Japan's War, p. 121.
81. 20th AF, Stat. Sum., p. 7; USSBS, Oil in Japan's War, p. 7.
82. USSBS, Oil in Japan's War, p. 91.
83. AAF School of Applied Tactics, Orlando, Fla., Bottoms Up! Aerial Mines and Modern Warfare, pp. 23–24; USAF Hist. Div. Special File #T-52, *passim.*
84. Hq. XXI BC Advon, Use of VLR Aircraft in Fstablishing Mine Blockades in Principal Japanese Ports, 7 July 1944.
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86. Memo for King from Arnold, 3 Oct. 1944.
87. Rpt. of Sub-Committee on Shipping, COA, 20 Oct. 1944.
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90. CINCPAC-CINCPOA ser. 000966, Nimitz to Arnold, 7 Nov. 1944.
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94. R&R, AC/AS OC&R to AC/AS Plans, 30 Dec. 1944; R&R, AC/AS Plans to AC/AS OC&R, 9 Jan. 1945.

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96. TC (unnumbered), Harmon to Hansell, 5 Jan. 1945.

97. TC FN-26-10, LeMay to Arnold and Harmon, 26 Jan. 1945.

98. There is a critical bibliography of the theater sources on mining in Hist. Air War POA, IV, 191–98. 20th AF, STARVATION: Phase Analysis of Strategic Mining Blockade of the Japanese Empire is a general evaluation of the whole program; on background and preparations, see pp. 1–4; on training, see Hist. XXI BC, Jan.–Feb. 1945, pp. 1–2; Hist. 313th Bomb. Wg., Feb. 1945, pp. 19–20, and Mar. 1945, p. 23; TC FN-26-10 and FN-26-11, LeMay to Arnold and Harmon, 26 Jan. 1945; TC FN-03-32, XXI BC to DC 20th AF, 3 Feb. 1945; radg. P 0187, XXI BC to CG 20th AF, 3 Mar. 1945; 313th Bomb. Wg., notes on mtg. on mine warfare, 16 Feb. 1945.

99. 20th AF, STARVATION, pp. 4–5.

100. Ser. 291758, King to Nimitz, 29 Oct. 1944; R&R, AC/AS OC&R to C/S, 19 Jan. 1945.

101. Radg. 1094, LeMay to Arnold, 18 Mar. 1945; ltr., LeMay to Nimitz, 15 June 1945; 20th AF, STARVATION, pp. 38–43; Hist. Air War POA, IV, 193; USAF Hist. Div. Special File #T-52, p. 26.

102. Ltr., LeMay to CG 313th Bomb. Wg., 23 Jan. 1945.

103. TC FN-26-10, LeMay to Arnold and Harmon, 26 Jan. 1945.

104. TC G-27-14, Norstad to LeMay, 272331Z Jan. 1945; JTG, The Strat. Mining of Japan, 1 Feb. 1945, and comments thereon in memo for Combs from Bower, 7 Mar. 1945.

105. TC T-11-5, LeMay to Davies, 110848Z Mar. 1945; TC T-14-4, LeMay to Davies, 140349Z Mar. 1945.

106. USSBS, Sum. Rpt. (Pacific War), pp. 11–12; USSBS, The War against Japanese Transportation, 1941–45 [hereinafter cited as Japanese Transportation], chaps. iv, v, *passim*, and especially fig. 45 and index thereto on p. 50; TMR #47, 27 Mar. 1945.

107. Hq. 313th Bomb. Wg. FO 16, 25 Mar. 1945.

108. TMR #47, 27 Mar. 1945.

109. TMR #49, 30 Mar. 1945.

110. 20th AF, STARVATION, p. 8; USSBS, Japanese Transportation, p. 88; interrogation of Capt. Tamura, IJN, in USSBS, Interrogations of Japanese Officials [hereinafter cited Interrogations], I, 17; TC T-20-9, LeMay to Davies, 200741Z Mar. 1945.

111. TMR Nos. 52, 1 Apr. 1945; 53, 2 Apr.; 54, 3 Apr.; 62, 9 Apr.; 66, 13 Apr.

112. TC T-18-26, LeMay to Davies, 181145Z Apr. 1945.

113. Sum. of 20th AF Opns., p. 28.

114. USSBS, Japanese Transportation, Fig. 61, p. 84.

115. TMR #139, 3 May 1945; 20th AF, STARVATION, p. 10.

116. TMR #150, 5 May 1945.

117. USSBS, Japanese Transportation, p. 88; USSBS, Interrogations, I, 116; USSBS, Effects of Strat. Bombing on Japan's Economy, App. ABC, p. 54.

118. Memo for A-3 XXI BC from A-2, 27 Apr. 1945.

119. USSBS, Japanese Transportation, p. 88 and Fig. 40.

120. 20th AF, STARVATION, pp. 9–10; rpt. of Comdr. Tadenuma, 27 Oct. 1945, in USSBS, Interrogations, I, 217; USSBS, Campaigns of the Pacific War, pp. 332–37.

121. TC T-01-30, LeMay to Davies, 011203 May 1945.

122. TMR Nos. 173, 13 May 1945; 175, 16 May; 177, 18 May; 179, 20/21 May; 180, 22/23 May; 182, 24/25 May; 185, 27 May.

123. 20th AF, STARVATION, pp. 10–11; USSBS, Japanese Transportation, pp. 90–92 and figs. 41 and 65; USSBS, Interrogations, I, 17.

124. Radg. AIMCR 5039, LeMay to Davies, 012359Z June 1945; radg. AIMCR,

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LeMay to CG's of 58th, 73d, 313th, and 314th Wgs., 5 June 1945.

125. 20th AF, STARVATION, p. 12; TMR Nos. 190, 7 June 1945; 194, 9 June; 201, 11 June; 202, 13 June; 204, 15 June; 205, 17 June; 213, 19 June; 214, 20 June; 221, 23 June; 222, 24 June; 233, 27 June; 239, 29 June; 244, 2 July; 246, 3 July.

126. CG XXI BC, Wkly. Status of Mine Warfare Program, 18 Apr. 1945; radg. 202122Z, CINCPOA Pearl to COMWESSEAFRON, 20 Apr. 1945.

127. USSBS, Interrogations, I, 16–21, 116–17, 245–48, 257–58; 20th AF, STARVATION, p. 12.

128. USSBS, Japanese Transportation, pp. 92–93, 97 (fig. 72); 20th AF, STARVATION, p. 12.

129. USSBS, Japanese Transportation, pp. 94–97; radg. AIMCR 6350, Kissner to Davies, 30 June 1945.

130. TMR Nos. 256, 9/10 July; 262, 11/12 July; 268, 13/14 July; 269, 15/16 July; 275, 17/18 July; 276, 19/20 July; 282, 22/23 July; 292, 24/25 July; 296, 27/28 July; 304, 29/30 July; 305, 1/2 Aug.; 311, 5/6 Aug.; 318, 7/8 Aug.; 331, 14/15 Aug.

131. USSBS, Japanese Transportation, pp. 94–97, 117.

132. USSBS, Sum. Rpt. (Pacific War), p. 11; Sum. 20th AF Opns., 5 June 1944 to 14 Aug. 1945, p. 28.

133. TC KG-14-9-H, CG 20th AF to CG's XX and XXI BC, 142232Z Apr. 1945; TC FN-23-5, LeMay to Arnold, 23 Apr. 1945.

134. Ser. 001024, Comdr. 12th Flt. to CNO, 16 May 1945; ser. 070138Z, CINCPOA to CG XXI BC, 7 Apr. 1945; ser. 020412Z, CINCPAC to USASTAF, 2 Aug. 1945.

135. USSBS, Interrogations, I, 218.

NOTES TO CHAPTER 22

1. H. H. Arnold, *Global Mission* (New York, 1949), pp. 342–43.

2. JCS 567/1, 8 Nov. 1943; min., JCS 122d mtg., 7 Nov. 1943.

3. CCS 680/2, 16 Sept. 1944. For additional discussion concerning Allied plans to end the war with Japan, see also Rav S. Cline, *Washington Command Post: The Operations Division, U.S. Army in World War II*, (Washington, 1951), pp. 333–51.

4. Memo for Arnold from Maj. Gen. H. A. Craig, Chief, Theater Gp., OPD, 3 Nov. 1944.

5. JCS 924/8, 23 Nov. 1944.

6. Min., JPS 176th mtg., 25 Oct. 1944; JCS 924/7, 6 Nov. 1944; min., JPS 180th mtg., 22 Nov. 1944.

7. JCS 924/6, 3 Nov. 1944; min., JPS 182d mtg., 6 Dec. 1944.

8. Msg., CINCPOA to COMINCH, 172352 Dec. 1944; CINCPAC-CINCPOA, Joint Staff Study, LONGTOM, 27 Feb. 1945.

9. JCS 713/20, 11 Jan. 1945; msg., JCS to Nimitz, WARX-22012, 17 Jan. 1945; CCS 417/11, 22 Jan. 1945; min., CCS 184th mtg., 1 Feb. 1945.

10. Msg., Marshall to MacArthur, ARGONAUT #59, 7 Feb. 1945; msg., CINCSWPA to WD, CA-50688, 26 Feb. 1945. The JCS believed that Hainan would furnish air bases opening up the interior of China to attack; it might be of especial value if the invasion of Japan had to be delayed into 1946. (Min., CCS 184th mtg., 1 Feb. 1945.)

11. Memo for C/S USA from Col. George A. Lincoln, OPD, 8 Mar. 1945.

12. Staff memo, Hq. USSTAF, Centralization of Control of U.S. AAF Operating in the War Against Japan, 4 Nov. 1944, p. 1.

13. Memo for Marshall from Arnold, 27 Oct. 1944.

14. See also memo for Hull from Arnold, 8 Nov. 1944; memo for Giles from Kuter, n.d.; JCS 1259/1, 28 Feb. 1945.

15. Staff memo, Hq. USSTAF, 4 Nov. 1944.

16. Draft memo, AC/AS Plans, Direction of the Strategic Air Offensive Against Japan, n.d.; memo for Combined and Joint Staff Div. from Kuter, AC/AS Plans, 12 Dec. 1944.

17. Memo for Arnold from Hull, AC/S OPD, 24 Nov. 1944.

18. Memo for Combined and Joint Staff Div. from Kuter, 12 Dec. 1944.

19. Memo [for King] from Marshall, 21 Dec. 1944.

20. CM-IN-16870, MacArthur to Marshall, 17 Dec. 1944; memo for C/S from Craig, 4 Jan. 1945.

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21. JCS 1259/1, 28 Feb. 1945.

22. Arnold, *Global Mission*, p. 569.

23. See Strategy and Policy Group, OPD, Compilation of Material for use at ARGONAUT, addendum 5B.

24. JCS 1259/1, 28 Feb. 1945.

25. JCS 1259/2, 10 Mar. 1945, records the substance of comments at the JCS meeting on 8 Mar. 1945; JCS 1259/3, 16 Mar. 1945, includes the memos of Marshall and King.

26. Memo for Marshall from Hull, 13 Mar. 1945.

27. Min., JPS 192d mtg., 10–16 Mar. 1945; JCS 1259/3, 16 Mar. 1945. Army and AAF planners asserted, however, that the Navy proposal was workable only in case CINCSWPA were also CINCJAPA and CINCAFPAC, a proposition to which the Navy planners did not agree.

28. Lincoln, notes on JCS 1259/3, n.d.

29. Memo for Marshall from Hull, 13 Mar. 1945.

30. Memo for Marshall from Hull, 28 Mar. 1945.

31. Memo for JCS from King, 20 Mar. 1945. Kuter, in marginal comments, considered the proposed directives not acceptable. King would have had the Twentieth Air Force remain under direct control of the JCS "until such time as they may determine that its operational control should be shifted in order to provide for coordination of air effort against Japan." Kuter thought this "new & interesting" and "dangerous." It is pertinent to contemporary Navy opinion to note that on 10 Mar. 1945 Secretary James Forrestal informed Admiral Leahy that ". . . the matter of the 21st Bomber Command . . . should be settled, that they were now operating almost entirely on their own without reference to any other military efforts in the Pacific. . . ." Forrestal thought that the B-29's "should be brought into the pattern if full advantage was to be taken of their capabilities. . . ." (Walter Millis, ed., *The Forrestal Diaries* [New York, 1951], p. 32.)

32. George C. Kenney, *General Kenney Reports* (New York, 1949), pp. 532–33; see also Robert E. Sherwood, *Roosevelt and Hopkins, An Intimate History* (New York, 1948), pp. 877–78.

33. Msg., Hull to MacArthur, 29 Mar. 1945. This message may not have been sent.

34. JCS 1259/4, 3 Apr. 1945; See also memo for Marshall from Hull, 31 Mar. 1945; ltr., Giles to Arnold, 5 Apr. 1945.

35. CM-OUT-62773, JCS to CINCSWPA *et al.*, 3 Apr. 1945; CM-OUT-62774, JCS to CINCSWPA *et al.*, 3 Apr. 1945.

36. Msg., MacArthur to COMAAFSWPA *et al.*, 9 Apr. 1945; msg. C-16063, GHQSWPA to WAR, 12 May 1945.

37. Msg. C-17386, GHQSWPA to WD, 30 May 1945; JCS 1357, 17 May 1945; JCS 1357/1, 1 June 1945; CCS 890, 8 July 1945; CCS 890/2, 18 July 1945; min., CCS 200th mtg., 24 July 1945; SACSEA, Rpt. to the CCS, pp. 221–22; CCS 852/2, 10 Aug. 1945; CCS 901/6, 20 Aug. 1945; CCS 901/10, 22 Aug. 1945.

38. Memo for Arnold from AC/AS Plans, in Daily Activity Rpt., 30 Apr. 1945; draft memo for JCS from CG AAF, n.d., with App. B, Delineation of Logistic Responsibilities of CINCAFPAC, CINCPAC, COMGENUSASTAF, and App. C, draft directive for establishment of USASTAF.

39. Hq. DC 20th AF GO 10, 4 May 1945.

40. TC H-16–10, Norstad to Giles, 16 May 1945.

41. CM-IN-13960, Arnold to Giles, 15 Apr. 1945; CM-IN-13927, Arnold to Norstad, 15 Apr. 1945; TC G-17–1, Norstad to LeMay, 17 Apr. 1945.

42. TC, Norstad (Washington) with LeMay (Guam), work copy No. 1, 5 May 1945.

43. Ltr., Spaatz to Eaker, 2 May 1945.

44. Ltr., Eaker to Spaatz, 27 Apr. 1945; see also ltr., Arnold to Spaatz, 21 May 1945.

45. Ltr., Arnold to Spaatz, 21 May 1945.

46. Msg. CX-16199, GHQSWPA to WD, 14 May 1945.

47. *General Kenney Reports*, pp. 537–38.

48. Msg. CX-16553, GHQSWPA to WD, 19 May 1945; ltr., Vice Adm. C. H. McMorris, C/S PAC-POA to CINCPAC-CINCPOA, 19 May 1945.

49. JCS 924/15, 25 Apr. 1945; memo

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for Marshall from Hull, 28 Mar. 1945; *The Forrestal Diaries*, p. 70.

50. JCS 1331, 30 Apr. 1945.

51. JWPC 350/1, 1 May 1945; memo for Lincoln from Adm. D. B. Duncan, 1 May 1945; memo for Duncan from Lincoln, 2 May 1945; min., JPS 200th mtg., 2 May 1945; memo for C/S from Lincoln, 8 May 1945; JCS 1331/2.

52. Memo for Marshall from King, 19 May 1945.

53. Memo for CINCUS and CNO from C/S USA, 22 May 1945; see also memo for C/S from Hull, 24 May 1945; memo for CINCUS and CNO from C/S USA, 25 May 1945.

54. JCS 1331/3, 25 May 1945. President Truman approved the Kyushu invasion on 15 June 1945. (See Leahy, *I Was There*, p. 384.)

55. JCS 742/9, 26 May 1945.

56. Memo for Marshall, King, and Arnold from JCS Secretariat, 28 May 1945.

57. Memo for Arnold from Norstad, 29 May 1945.

58. Memo for Norstad from Col. Curtis R. Low, 27 May 1945.

59. Memo for Leahy, Marshall, and King from Arnold, 30 May 1945.

60. JCS 742/10, 31 May 1945; CM-OUT-10463, JCS to Nimitz and MacArthur, 1 June 1945.

61. CM-IN-1727, Nimitz to King, 2 June 1945.

62. CM-IN-2386, MacArthur to WD, 3 June 1945.

63. Draft msg., Eaker to Arnold, 21 June 1945.

64. JCS 742/11, 8 June 1945.

65. Arnold, *Global Mission*, p. 569.

66. Memo by CG AAF, 2 July 1945; memo for Leahy, Marshall, and King from Arnold, 7 July 1945; memo for Arnold from King, 10 July 1945; JCS 742/12, 11 July 1945; CM-OUT-29978, JCS to MacArthur, Nimitz, and Spaatz, 11 July 1945.

67. Ltr., S/W to CG AAF *et al.*, 13 July 1945; see also TC-12-10, Arnold to Giles, 12 July 1945.

68. GHQAFPAC, DOWNFALL, The Strategic Plan for Operations in the Japanese Archipelago, 28 May 1945; see also msg. CX-16533, GHQSWPA to WD, 19 May 1945; ltr., McMorris to CINCPAC-CINCPOA, 19 May 1945.

69. GHQAFPAC Staff Study, OLYMPIC, Operations in Southern Kyushu, 28 May 1945.

70. Msg. CX-24142, CINCAFPAC to CINCPAC, 9 July 1945.

71. Arnold, *Global Mission*, p. 570; msg. CX-24152, CINCAFPAC to Guam, 9 July 1945.

72. Msg., CINCPOA Advon to CINCAFPAC, 100218 July 1945.

73. TC-WD-TT-3373, Giles to Eaker, 10 July 1945.

74. CM-IN-7313 (8 Aug. 45), CG USASTAF to WD, 7 Aug. 1945.

75. Msgs. CX-30410 and CX-30958, CINCAFPAC to CINCPAC Advon, 3 and 4 Aug. 1945.

76. Ltr., Whitehead to Kenney, 18 Sept. 1944; FEAF, Draft Study on STINGER ONE, FEAF Concept of Air Garrisons for ICEBERG, 6 Feb. 1945.

77. Ltr., Whitehead to Kenney, 8 Apr. 1945. This letter acquires additional interest when read with Kenney's published statement that he reported to Marshall on his trip to Washington in the preceding March that "Japan was through." (*General Kenney Reports*, p. 530.)

78. For the ground campaign in the Ryukyus see Roy E. Appleman, James M. Burns, Russell A. Gugeler, and John Stevens, *Okinawa: The Last Battle, U.S. Army in World War II* (Washington, 1948) [hereinafter cited Appleman, *Okinawa*].

79. Sum. of 7th AF Opns., 1 Apr.–30 June 1945, pp. 6–7; Appleman, *Okinawa*, pp. 183, 419–20.

80. Appleman, *Okinawa*, p. 419. The third phase of ICEBERG was "indefinitely deferred" by JCS action on 9 June 1945 (JCS 713/24, 10 June 1945).

81. Rpt., Lt. Col. D. R. Ward, Actg. Air Engr., 5th AF, 24 Apr. 1945; check sheet, 5th AF A-4 to Supply Div., FEASC, 28 Apr. 1945.

82. Msg. C-16548, GHQSWPA to WD, 19 May 1945; msg. CX-17134, GHQSWPA to CG AFPOA, 27 May 1945.

83. Msg., CINCPAC to COMINCH, 041231 June 1945; msg. CX-17860, CINCAFPAC to WD, 6 June 1945;

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USPAC-POA, Agreement Relative to Reinforcement of Army Air Forces at Okinawa, 6 June 1945.

84. Appleman, *Okinawa*, p. 419; ltr., Brig. Gen. David Hutchison, CG 308th Bomb. Wg. to CG 5th AF, 17 June 1945; see also Clive Howard and Joe Whitley, *One Damned Island After Another* (Chapel Hill, 1946), p. 361.

85. Ltr., Kenney to Arnold, 11 July 1945.

86. Msg. CX-28598, CINCAFPAC to COMGENAFMIDPAC *et al.*, 27 July 1945; GHQAFPAC, Engineers in Theater Operations, I, 298–306.

87. Msg. CX-31262, CINCAFPAC to CG 10th Army, 6 Aug. 1945.

88. Msg., CG Advon FEAF to CG 10th Army, 201810 July 1945; msg., CG 10th Army to CINCPAC, 210143 July 1945.

89. Air Engr., FEAF, Wkly. Gen. Constr. Rpt., 6 Aug. 1945.

90. Hist. 7th AF, 1 Apr. 1945–14 July 1945, pp. 15–27, 98–101.

91. Ltr., Whitehead to Kenney, 8 Apr. 1945.

92. Msg. U-897-G, 308th Bomb. Wg. to CG FEAF, 16 June 1945; msg. AX-70655, CG FEAF to 308th Bomb. Wg., 15 June 1945.

93. Msg. U-3908-F, CG 5th AF to CG V FC, 20 June 1945; msg. U-4767-E, CG 5th AF to 309th Bomb. Wg., 30 June 1945; msg., CO 35th Ftr. Gp. to COMAAFSWPA, 020918 July 1945; msg., CINCPOA Advon to CG 10th Army, 040546 July 1945; msg., CG 10th Army to CINCPOA Advon, 051325 July 1945.

94. Msg. Y-1092-E, CG 5th AF to V FC *et al.*, 2 July 1945; msg. Y-1260-E, CG 5th AF to CG 13th AF, 4 July 1945.

95. Hist. V FC, 1 Apr.–2 Sept. 1945, pp. 49–50. Before the end of the war two more fighter groups, the 49th (25 August) and the 3d Air Commando (29 August), had begun operations from Okinawa.

96. Msg., CINCPOA Advon to CINCPOA Pearl, 182108 May 1945.

97. Hist. 91st Rcn. Wg., 1 June–31 Aug. 1945.

98. Hist. V BC, Aug. 1945, p. 4; msg. Y-1204-A, 308th Bomb. Wg. to CG 5th AF, 11 July 1945; msg. Y-1611-E, Advon FEAF to V BC, 23 July 1945; Hist. 43d Bomb. Gp., July 1945, p. 27.

99. Msg. Y-1286-A, CG 308th Bomb. Wg. to CG FEAF, 14 July 1945; msg., CG 7th AF to CG FEAF, 140001 July 1945.

100. Hist. 7th AF, 14 July–2 Sept. 1945, pp. 2–5.

101. Msg., DC 20th AF to CINCAFPAC, 091245 July 1945.

102. Hist. 7th AF, 14 July–2 Sept. 1945, p. 13; msg. AX-77301, CG FEAF to CG 7th AF, 16 July 1945.

103. Msg., CG 10th Army to CINCAFPAC, 150433 July 1945.

104. Msg. CX-28598, CINCAFPAC to COMGENAFMIDPAC, 27 July 1945; Hist. 7th AF, 14 July–2 Sept. 1945, p. 6.

105. Msg. AX-77185 CG FEAF to CG Advon FEAF *et al.*, 15 July 1945.

106. Msg. Y-1732-E, Advon FEAF to CG 7th AF *et al.*, 25 July 1945; Hist. 7th AF, 14 July–2 Sept. 1945, p. 21.

107. Hist. 7th AF, 1 Apr.–14 July 1945, p. 105, and 14 July–2 Sept. 1945, appended notes.

108. Hist. 5th AF, 15 June 1944–2 Sept. 1945, pp. 92–94.

109. 5th AF OI #15 (Rev.), 7 July 1945; msg. AX-75775, CG FEAF to CG Advon FEAF, 11 July 1945; msg. AX-78507, CG FEAF to CINCAFPAC, 25 July 1945.

110. Msg. CX-26004, CINCAFPAC to FEAF, 17 July 1945.

111. Memo for Donald Hutchison from Whitehead, 11 July 1945.

112. Msg., COM3DFLT to XX BC *et al.*, 132145 July 1945; msg. CX-25865, CINCAFPAC to CG FEAF, 16 July 1945; msg. AX-77476 CG FEAF to CINCAFPAC, 17 July 1945; msg. AX-80359, CG FEAF to Advon FEAF, 7 Aug. 1945.

113. Hist. 7th AF, 1 Apr.–14 July 1945, pp. 76–82.

114. *Ibid.*, pp. 82–95.

115. Hist. V FC, 1 Apr.–2 Sept. 1945, pp. 50–51.

116. Hist. 5th AF, 15 June 1944–2 Sept. 1945, chap. 10, pp. 6–34.

117. Hist. 7th AF, 14 July–2 Sept. 1945, p. 25; 34th SCU, Area Bomb. Study Nine, Japan.

118. Hist. 7th AF, 14 July–2 Sept. 1945, pp. 49–62.

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119. *Ibid.*, 1 Apr.–14 July 1945, pp. 86–88, and 14 July–2 Sept. 1945, pp. 42–44, 76–78.

120. Hist. V FC, 1 Apr.–2 Sept. 1945, pp. 55–58.

121. Histories of 63d and 868th Bomb. Sqs., July–Aug. 1945; Hist. 7th AF, 14 July–2 Sept. 1945, pp. 74–75.

122. Hist. 7th AF, 14 July–2 Sept. 1945, pp. 72–73; USSBS, Campaigns of the Pacific War, p. 346.

123. Hist. 7th AF, 14 July–2 Sept. 1945, pp. 70–71; USSBS, The Effects of Strategic Bombing on Japan's War Economy, p. 47; Advon FEAF, 2d and 3d OAS, Memo Rpt.: Evaluation of 7 August 1945 Thousand Pound GP Raid on Omuta Industrial Plants, 31 Oct. 1945.

124. Hist. 7th AF, 14 July–2 Sept. 1945, pp. 65–67, 69–70; Advon FEAF, 2d and 3d OAS, Eval. of . . . Attack . . . Kyushu, 11 Oct. 1945.

125. Ltr., Whitehead to Chennault, 21 Aug. 1945; ltr., Whitehead to Lt. Gen. Sir Edmund Herring, Comdg. Australian Military Forces, 17 Sept. 1945.

126. CM-OUT-47889, Marshall to MacArthur, 11 Aug. 1945; msg. AX-82071, COMAAFSWPA to CG 5th AF, *et al.*, 12 Aug. 1945; msg., Kenney to Whitehead, 141245 Aug. 1945; msg. AX-82369, CG FEAF to CG 5th AF *et al.* 15 Aug. 1945; msg. AX-82383, COMAAF-SWPA to CG 5th AF *et al.* 15 Aug. 1945.

127. Hist. V BC, Aug. 1945, pp. 13–23; Hist. 7th AF, 14 July–2 Sept. 1945, pp. 118–26.

128. Hist. V FC, 1 Apr.–2 Sept. 1945, p. 59.

129. 34th SCU, Area Bomb. Study Nine, Japan.

130. 9th SCU, 7th AF, Sum. Combat Opns., Assigned and Attached Units, 28 Aug. 1945.

131. 34th SCU, 5th AF Stat. Summaries, July–Aug. 1945. Only 90 planes were lost due to all causes in July and 104 during August.

132. 9th SCU, 7th AF, Sum. Combat Opns., Assigned and Attached Units.

133. USSBS, The Effects of Strategic Bombing on Japan's War Economy, pp. 61–62.

134. *Ibid.*, p. 44.

135. Msg. WAR-65143, AFIJT to CINCSWPA, 7 Apr. 1945.

136. Msg. CX-30940, CINCAFPAC to Guam, 5 Aug. 1945; msg. A-80388, CG FEAF to WD, 7 Aug. 1945; msg. CX-34703, CINCAFPAC to WD, 18 Aug. 1945.

137. Ltr., Whitehead to Chennault, 21 Aug. 1945.

138. Hist. Air War POA, II, 446.

139. *Ibid.*, pp. 449–50.

140. Min., conference of Spaatz with staff at Hq. USASTAF Admin., Hickam Field, 27 July 1945; special committee, Brig. Gen. A. R. Maxwell, chairman, unpublished rpt. to the JCS by the CG AAF on the Strategic Air War in Europe and the Pacific, 1947, sec. III-B, pp. 7–8.

141. Ltr., CG USASTAF to CG's 8th and 20th AF's, 6 Aug. 1945.

142. Hist. Air War POA, II, 484–90; 8th AF GO 1, 19 July 1945; Daily Activity Rpt., AC/AS OC&R, 15 May 1945.

143. Ltr., Brig. Gen. Richard C. Lindsay, AC/AS A-5, USASTAF to Norstad, 6 Aug. 1945.

144. Rpt. of Ladd Bd. on Internal and External Requirements for Self-Sustaining VHB Wing Opns., Sept. 1945, pp. 7–8.

145. Hist. Air War POA, Vol. II, chaps. xi, xii, xiii.

NOTES TO CHAPTER 23

1. Statement by President Truman, 6 Aug. 1945, in New York *Times*, 7 Aug. 1945. The basic account of the scientific work is, of course, the so-called "Smyth Report": H. D. Smyth, *A General Account of the Development of Methods for Using Atomic Energy for Military Purposes under the Auspices of the U.S. Government* (Washington, 1945). All popular accounts derive from this; two of the better ones are J. W. Campbell, *The Atomic Story* (New York, 1947) and W. L. Laurence, *Dawn over Zero* (New York, 1946).

2. *Hearings, Special Com. on Atomic Energy, 79th Cong. . . . S. R. 179* (Washington, 1947), p. 7.

3. *Ibid.*, p. 383 (testimony of Cdre. W. S. Parsons); H. H. Arnold, *Global Mission* (New York, 1949), pp. 491–93.

4. *Hearings, . . . S. R. 179*, p. 382; Hist. 509th Comp. Gp., in Hist. 313th Wg., Activation to 15 Aug. 1945, pp. 3–6;

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Roster of Officers, 509th Gp., 15 Mar. 1945.

5. Wendover Fld. GO 6, 17 Dec. 1944; Hist. 509th Comp. Gp., pp. 1–2, 8–11; *509th Pictorial Album* (Tinian, 1945), *passim.*

6. 393d Bomb. Sq. (VH), Opnl. Tng. Rpt., 29 Oct. 1944; 393d Bomb. Sq. (VH), Crew Progress Chart, WAAF (n.d.); Hist. 509th Comp. Gp., pp. 45–49; 509th Comp. Gp., Mission Planning Sum. #1 (n.d.).

7. TC H-6-3, CG 20th AF to DC 20th AF, 6 Feb. 1945; Hist. of VHB Constr., pp. 95–99; Hist. 509th Comp. Gp., pp. 15–40; *Hearings, . . . S. R. 179,* pp. 234–35 (testimony of Dr. Philip Morrison).

8. Hist. 509th Comp. Gp., pp. 21, 39; map of Tinian, with locations and dates of moves of the group, attached to 509th Comp. Gp. Comd. Bk.; Laurence, *Dawn over Zero,* p. 198.

9. 20th AF Atomic Project (Investigation) File, Project Rpt. #2, 18 Aug. 1945.

10. The verse, written by a clerk in North Field's Base Operations, is reproduced in the 509th Comp. Gp. Comd. Bk.; Laurence, *Dawn over Zero,* p. 201; 313th Bomb. Wg. Insignia Chart; Hist. 509th Comp. Gp., p. 56.

11. 313th Wg. Tng. Program, 509th Gp. Indoctrination School, 23 June 1945; 509th Gp. Comd. Bk., Opns. Orders Nos. 1–19, 21–22, 29 June–22 July 1945; Hist. 509th Comp. Gp., pp. 50–55.

12. 509th Comp. Gp. "Frag Plans" Nos. 11–23, 20–29 July 1945; 509th Comp. Gp., Opns. Orders Nos. 20, 23–25, 27–32, 20–31 July 1945; 509th Comp. Gp., Final Rpts. of Missions, Nos. 1–12, 20–29 July 1945; 509th Comp. Gp. Mission Planning Sum., Nos. 1–5 (n.d.); Hist. 509th Comp. Gp., pp. 58–61; Hist. Air War POA, IV, 228.

13. 509th Comp. Gp., Mission Planning Sum. #1.

14. USSBS, Strat. Air Opn. . . . VHB, p. 18; Hist. 509th Comp. Gp., p. 58; 509th Mission Planning Sum. #2; 509th Comp. Gp. Opns. Orders cited above in *n* 12; USSBS, Effects of the 10,000-pound Bomb on Japanese Targets, *passim.*

15. 509th Comp. Gp. Final Rpts. of Missions, Nos. 1–12, 20–29 July 1945; USSBS, Effects of the 10,000-pound Bomb.

16. Hist. 509th Comp. Gp., p. 58.

17. 509th Comp. Gp. Mission Planning Sum., #8; Walter Karig, Russell L. Harris, and Frank A. Manson, *Battle Report: Victory in the Pacific* (New York, 1949), pp. 494–95.

18. Henry L. Stimson, "The Decision to Use the Atomic Bomb," *Harper's Magazine,* Vol. 194 (Feb. 1947), pp. 97–99.

19. *Ibid.,* pp. 100–101.

20. *Bulletin of the Atomic Scientists,* Vol. I, No. 10 (1 May 1946), pp. 1–4, 16.

21. Memo for Stimson, 16 June 1945, quoted in his article cited in note 18, p. 101.

22. *Ibid.,* pp. 104–5 (the quotation is Stimson's paraphrase); Arnold, *Global Mission,* pp. 491, 589; TC G-15-11, CG 20th AF to CG XXI BC, 15 May 1945. Earlier lists at 20th AF Hq. sometimes contained four cities, but in this message to LeMay only three are named. Kyoto suffered three small B-29 attacks, all unintentional (USSBS, Effects of Air Attacks on Osaka-Kobe-Kyoto, p. 246).

23. W. D. Leahy, *I Was There* (New York, 1950), pp. 245, 269, 431.

24. *Ibid.,* p. 307; draft TC (no number), Norstad to Kuter, 20 June 1945; Arnold, *Global Mission,* pp. 566–67.

25. JCS 924/15, 25 Apr. 1945; JPS 697/D, 14 June 1945; JWPC 369/1, 15 June 1945; JCS 1388, 16 June 1945. JCS mtgs. 14, 15, 29 June, and White House Conference, 18 June, are described in Leahy, *I Was There,* p. 383.

26. Leahy says Marshall and King "both strongly advocated an invasion of Kyushu at the earliest possible date. This was a modification of King's stand." Leahy opposed the idea but went along with the others (*I Was There,* p. 384). Compare the explanation in Ernest J. King and Walter M. Whitehill, *Fleet Admiral King* (New York, 1952), pp. 605–6.

27. Joseph C. Grew, *Turbulent Era,* ed. Walter Johnson (New York, 1952), chap. xxxvi.

28. *The Forrestal Diaries,* ed. W. Millis (New York, 1951), pp. 68–70; Stimson, as cited in note 18 above, pp. 102–4; James F. Byrnes, *Speaking Frankly* (New York, 1947), p. 206. The account in H. L. Stimson and M. Bundy, *On Active Service in Peace and War* (New York, 1947),

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chap. xxiii follows very closely Stimson's article cited in note 18.

29. CCS 900/3, 24 July 1945; Leahy, *I Was There*, pp. 394–429; Byrnes, *Speaking Frankly*, pp. 205–8.

30. Text in *Dept. of State Bulletin*, XIII (27 July 1945), 136.

31. *Hearings, . . . S. R. 179*, p. 382 *et passim;* Laurence, *Dawn over Zero*, chaps. i and xiii.

32. Arnold, *Global Mission*, pp. 492, 582–89; ltr., Gen. Thos. T. Handy to Spaatz, 25 Aug. 1945; CM-OUT-37683, Handy to Marshall, 24 July 1945; CM-OUT-37720, Spaatz to Arnold, 24 July 1945; CM-IN-24908, Marshall to Handy, 25 July 1945; CM-IN-25178, Arnold to Spaatz, 25 July 1945.

33. Leahy, *I Was There*, p. 429; Byrnes, *Speaking Frankly*, p. 262.

34. Toshikazu Kase, *Journey to the Missouri* (New Haven, 1950), pp. 209–10.

35. *Hearings, . . . S. R. 179*, p. 40; London *Times*, 8 Aug. 1945, quoted in P. M. S. Blackett, *Fear, War, and the Bomb* (New York, 1948), pp. 127–28; *ibid.*, pp. 131–39; Norman Cousins and Thomas K. Finletter, "A Beginning for Sanity," *Saturday Review of Literature*, 15 June 1946, pp. 5–8.

36. Byrnes, *Speaking Frankly*, p. 208; Leahy, *I Was There*, p. 417.

37. Ltr., Harry S. Truman to Dr. Karl Compton, in *Atlantic Monthly*, Vol. 179 (Feb. 1947), p. 27.

38. *Hearings, . . . S. R. 179*, p. 40.

39. *Ibid.*, pp. 234, 502; Karig *et al.*, *Battle Report*, pp. 491–92; Laurence, *Dawn over Zero*, p. 204.

40. Roster of 1st Technical Service Detachment, Hq. 509th Comp. Gp., 11 Aug. 1945; 509th Comp. Gp., Command Book, Opns. Order #31, 30 July 1945 (for 31 July).

41. Karig, *et al.*, *Battle Report*, pp. 494–95, quoting Parsons and Tibbets.

42. 509th Comp. Gp., FO #13, 2 Aug. 1945; 509th Comp. Gp. Comd. Bk., Opns. Order #35, 5 Aug. 1945; 509th Comp. Gp. Mission Planning Sum., Rpt. #8.

43. USSBS, Effects of Air Attack on the City of Hiroshima, pp. 1–14; USSBS, Effects of Atomic Bombs on Hiroshima and Nagasaki, pp. 5–6 (here Hiroshima is incorrectly called the *seventh* largest city); 509th Comp. Gp. Mission Planning Sum., Rpt. #8.

44. 509th Comp. Gp. Mission Planning Sum., Rpt. #8; 509th Gp. Comd. Bk., Opns. Order #35, 5 Aug. 1945.

45. Hist. 509th Comp. Gp., p. 64.

46. *Ibid.*, pp. 64–66; Laurence, *Dawn over Zero*, pp. 207–11; Merle Miller and Abe Spitzer, *We Dropped the A-Bomb* (New York, 1946), pp. 1–28; Karig *et al.*, *Battle Report*, p. 495.

47. Hist. 509th Comp. Gp., pp. 67–68; 509th Comp. Gp., Final Rpt., Mission #13, 6 Aug. 1945; 313th Wg., Form 34, Special Bombing Mission #13, 6 Aug. 1945; *Hearings, . . . S. R. 179*, p. 386.

48. Compare the various statements (unchallenged) which followed executive sessions in the Congressional hearings in autumn 1945: *Hearings, . . . S. R. 179*, p. 238 (1,500 or 1,800 feet); p. 245 (1,500 feet); p. 506 (2,000 feet). And see the statement in *The Effects of Atomic Weapons: Prepared for and in Cooperation with the U.S. Dept. of Defense and the U.S. Atomic Energy Commission under the Direction of the Los Alamos Scientific Laboratory* (Washington, 1950), p. 35, that at Hiroshima and Nagasaki the burst was at "about 2,000 feet."

49. Hist. 509th Comp. Gp., pp. 68–69; 509th Comp. Gp., Final Rpt., Mission #13, 6 Aug. 1945. Eyewitness accounts include those of Parsons (*Hearings, . . . S. R. 179*, pp. 386–89; Spitzer, in Sweeney's plane (Miller and Spitzer, *op. cit.*, pp. 41–48); and statements from Lewis, Tibbets, and others (in Laurence, *Dawn over Zero*, pp. 218–20).

50. 509th Comp. Gp., Final Rpt., Mission #13, 6 Aug. 1945; Hist. 509th Comp. Gp., pp. 69–70; Miller and Spitzer, *op. cit.*, p. 49.

51. Leahy, *I Was There*, pp. 430–32; Byrnes, *Speaking Frankly*, p. 209. The text of the President's statement and of a fuller one by Stimson are printed in the New York *Times*, 7 Aug. 1945.

52. Kase, *Journey to the Missouri*, pp. 212–14. A sample leaflet is reproduced in Laurence, *Dawn over Zero*, p. 222.

53. Miller and Spitzer, pp. 51–56; Laurence, *Dawn over Zero*, pp. 223–26; TC, CG USASTAF, Spaatz to Arnold, 10 Aug. 1945.

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54. *Hearings, . . . S. R. 179,* p. 40; Stimson, as cited in note 18 above, p. 105.

55. Laurence, *Dawn over Zero,* pp. 207, 226.

56. 20th AF Hq., Narrative Hist., 1 July–2 Sept. 1945, Chronology; XXI BC TMR Nos. 317, 318 (7 Aug. 1945); Nos. 319–21 (8 Aug. 1945); #322 (9 Aug. 1945); 509th Comp. Gp., Final Mission Rpts., Nos. 14 and 15, 8 Aug. 1945.

57. 509th Mission Planning Sum., Rpt. #9; 509th Comp. Gp. FO #16, 9 Aug. 1945; 509th Comp. Gp., Opns. Orders #39, 8 Aug. 1945; USSBS, Effects of Air Attack on the City of Nagasaki, pp. 1–9 [hereinafter cited Air Attack . . . Nagasaki].

58. 509th Comp. Gp., Final Rpt., Mission #16, 9 Aug. 1945; 313th Bomb. Wg., Form 34, Special Bombing Mission #16, 9 Aug. 1945.

59. There are two eyewitness accounts that add color and some information to the routine reports cited above: Laurence, *Dawn over Zero,* pp. 223–43 (Laurence, a science reporter for the New York *Times,* was in Bock's plane); Miller and Spitzer, *We Dropped the A-Bomb,* pp. 89–124 (Spitzer was radio operator on Sweeney's plane). Both give the time of release at 1201; the official reports, 1158 to 1201, all Tinian time. See also, Hist. 509th Comp. Gp., pp. 72–73, and *Hearings, . . . S. R. 179,* p. 387.

60. 313th Bomb. Wg., Form 34, Special Bombing Mission #16, 9 Aug. 1945; 509th Comp. Gp., Final Rpt., Mission #16, 9 Aug. 1945. The latter source indicates that Hopkins brought his plane back via Okinawa, but none of the other sources mention that fact. Bock did not see the plane or crew there (interview with Bock by J. L. Cate, 23 Nov. 1952), and it seems more likely that Hopkins would have returned directly or via Iwo Jima.

61. 20th AF, CIU, Damage Assessment Rpts., 7, 8, 19 Aug. 1945.

62. 20th AF Atomic (Investigation) File, an ill-assorted mass of communications and progress reports dated 15 Aug.–20 Sept. 1945; *Hearings, . . . S. R. 179,* p. 233.

63. Information on the two attacks and/or cities occurs in a number of the general USSBS studies, but those dealing exclusively with the subject are as follows: #3, The Effects of Atomic Bombs on Hiroshima and Nagasaki; #5, Field Report Covering Air Raid Protection and Allied Subjects, Nagasaki, Japan; #9, Field Report Covering Air Raid Protection and Allied Subjects, Hiroshima, Japan; #13, The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki; #92, Effects of the Atomic Bomb on Hiroshima, Japan; #93, Effects of the Atomic Bomb on Nagasaki, Japan. For the sake of brevity and clarity, these reports will be cited by the official USSBS number rather than by the cumbersome and confusingly similar titles.

64. *The Effects of the Atomic Bombs at Hiroshima and Nagasaki: Report of the British Mission to Japan* (London, 1946).

65. Including numerous extracts in the USSBS reports. The best account is that of John A. Siemes, S.J., "Hiroshima: Eyewitness," *Saturday Review of Literature,* 11 May 1946, pp. 24–25, 40–45.

66. Perhaps the most moving is John Hersey's *Hiroshima* (New York, 1946), based on interviews made after the surrender. For a short bibliography of early publications see *Special Com. on Atomic Energy, U.S. Senate, Essential Information on Atomic Energy* (Washington, 1946).

67. USSBS, #3, p. 3; #60, p. 17; Hersey, *Hiroshima,* pp. 4–5.

68. USSBS, #3, p. 5 and map at end; USSBS, #60, pp. 17–19 and maps labeled Exhibit 3A, 3B, and 4; 509th Comp. Gp., Mission Planning Sum., Rpt. #8.

69. USSBS, #3, pp. 15–20; #60, pp. 19–20; *Rpt. of British Mission,* pp. 17–18.

70. USSBS, #3, pp. 6–9; #13, *passim;* #60, pp. 19–31.

71. USSBS, #59, pp. 1–7 and map labeled Exhibit N; #5, *passim,* and especially pp. 69–76.

72. USSBS, #59, pp. 10–11; #3, pp. 9–13.

73. 509th Comp. Gp. FO #17, 8 Aug. 1945; 509th Comp. Gp. Mission Planning Sum., Rpt. #9; 509th Comp. Gp., Final Rpt., Mission #16, 9 Aug. 1945; USSBS, #3, map at end.

74. USSBS, #3, pp. 9–15; #59, pp. 10–17; USSBS, Effects of Air Attack on Japanese Urban Economy, p. 42.

75. USSBS, #59, p. 12; #13, *passim.*

76. See USSBS, Japan's Struggle to End the War [hereinafter cited Japan's Strug-

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gle]; USSBS, The Effects of Strategic Bombing on Japanese Morale, chap. 11 [hereinafter cited Japanese Morale]; USSBS, Interrogations of Japanese Officials, II, 313–26, 327–32 [hereinafter cited Interrogations]; Kase, *Journey to the Missouri*. The chronology of Kase's account differs in some instances from that of the USSBS reports, which have generally been followed here. Kase knew all the officials, talked to many of them, and was especially close to Togo. He was not, however, present at the decisive conferences and he shows a marked bias in favor of the peace party. The authors have seen no accounts that represent the war party's views other than the USSBS interrogations.

77. USSBS, Japan's Struggle, p. 1.

78. *Ibid.*, pp. 1–2; USSBS, Japanese Morale, pp. 138–40; Kase, *Journey to the Missouri, passim* and especially chap. 2.

79. USSBS, Japan's Struggle, pp. 2–3; Kase, *Journey to the Missouri*, pp. 65–86.

80. USSBS, Japan's Struggle, pp. 3–6; USSBS, Interrogations, II, 327–32 (of Yonai); Kase, *Journey to the Missouri*, pp. 87–109.

81. USSBS, Japan's Struggle, pp. 6–7; Kase, *Journey to the Missouri*, pp. 142–84; text of Truman's proclamation of 8 May, in N.Y. *Times*, 9 May 1945.

82. USSBS, Japan's Struggle, pp. 7–8; Byrnes, *Speaking Frankly*, p. 206; Leahy, *I Was There*, p. 420; text of the declaration in *Dept. of State Bulletin*, XIII (27 July 1945), p. 137.

83. USSBS, Japan's Struggle, p. 8; Kase, *Journey to the Missouri*, pp. 207–11; Byrnes, *Speaking Frankly*, p. 262; H. S. Truman, quoted in New York *Times*, 7 Aug. 1945.

84. R. E. Sherwood, *Roosevelt and Hopkins* (New York, 1948), p. 902; Leahy, *I Was There*, pp. 397, 415; Kase, *Journey to the Missouri*, pp. 218–30; J. R. Deane, *The Strange Alliance* (New York, 1947), pp. 272–77.

85. USSBS, Japan's Struggle, pp. 8–9, 13; Kase, *Journey to the Missouri*, pp. 230–40; TC 1695, Spaatz to Norstad, 10 Aug. 1945.

86. Text of the notes in R. Bennett and R. K. Turner, eds., *Documents on American Foreign Policy*, VIII (Princeton, 1948), 106–7. See also Byrnes, *Speaking Frankly*, pp. 209–10; and cf. Stimson and Bundy, *On Active Service*, pp. 626–28.

87. Text of the notes in U.S. State Dept., *The Axis in Defeat* (Washington, 1945), pp. 31–33. See also USSBS, Japan's Struggle, p. 9.

88. Kase, *Journey to the Missouri*, pp. 240–58; USSBS, Interrogations, II, 319–20 (of Toyoda).

89. Radg. (no number), JCS, Berlin to MacArthur and Nimitz, info. Spaatz, 261947Z July 1945; radg. 1119, Spaatz to Eaker, 020141Z Aug. 1945.

90. TC (no number), Norstad to LeMay, 081045Z Aug. 1945.

91. XXI BC TMR Nos. 317, 318 (7 Aug. 1945); Nos. 319, 320, 321 (8 Aug. 1945); #322 (9 Aug. 1945); Nos. 323, 324 (10 Aug. 1945).

92. 509th Comp. Gp. Final Rpts. of Missions, Nos. 14 and 15 (8 Aug. 1945); #16 (9 Aug. 1945).

93. Sum. 20th AF Opns., 5 June 1944–14 Aug. 1945, pp. 7–8; USSBS, Japanese Morale, pp. 128–34; Kase, *Journey to the Missouri*, pp. 206–7.

94. TC 1827, Spaatz to Arnold, 111120Z Aug. 1945; CM-OUT-47824, Marshall to Spaatz, 111215Z Aug. 1945; TC 1828, Spaatz to Marshall, 111215Z Aug. 1945; CM-OUT-47880, Arnold to Spaatz, 111535Z Aug. 1945.

95. TC (no number), Arnold to Spaatz, 14 Aug. 1945; 20th AF Stat. Sum., p. 87 (Mission Nos. 305–10); TC 1695, Spaatz to Arnold, 10 Aug. 1945; TC 12–14, Arnold to Spaatz, 121727Z Aug. 1945.

96. TC (no number), Spaatz to Arnold, 141222Z Aug. 1945; TC (no number), Lovett and Norstad to Spaatz and Giles, 142200Z Aug. 1945; XXI BC TMR Nos. 325–31, 14 Aug. 1945. As usual, the statistics given in the radio messages (here 836 B-29's and 173 fighters for a total of 1,009) are less reliable than later figures from the mission summaries (see 20th AF, Stat. Sum., pp. 68 and 87).

97. Hq. 20th AF, Narrative Hist., 1 July–2 Sept. 1945; 20th AF, Monthly Activity Rpt., 1 Oct. 1945, pp. 7–10, 20.

98. 20th AF Hq. DC/S A-3, Project Rpts. 1–3, 18–20 Aug. 1945; Deane, *The Strange Alliance*, p. 74.

99. See the almost daily references in 20th AF Hq. DC/S A-3, Project Rpts., 1–35, 18 Aug.–23 Sept. 1945.

100. *Ibid.*, under code names for the projects: SNEEZE OF GOD; USA-

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STAFADVON; SNOOPER. For the first, see also 20th AF Atomic (Investigation) File, 15 Aug.–20 Sept. 1945.

101. 20th AF Hq. DC/S A-3, Project Rpts., 1–16, 18 Aug.–3 Sept. and 40, 28 Sept. 1945; 20th AF Monthly Activity Rpt., 1 Oct. 1945, p. 7.

102. 20th AF, Stat. Sum., p. 53; 20th AF Hq. DC/S A-3, Project Rpts. 1–38, 18 Aug.–26 Sept. 1945, under heading POW Supplies; directive, Spaatz to CG 20th AF, POW and Internee Supply Project, 17 Aug. 1945; 20th AF, POW File contains much of the daily correspondence on this topic.

103. 20th AF Hq., Engineering Rpt. #42, 16 Aug. 1945; 20th AF, Stat. Sum., p. 53; 20th AF, POW File; 20th AF Air Intel. Rpt., Oct. 1945, pp. 3–4.

104. 20th AF, Stat. Sum., p. 53; radg. (no number), TOKAX, FEAF (ADVON) to CG 20th AF, 17 Sept. 1945; radg. 3427, CG USASTAF to CG FEAF (ADVON), 30 Aug. 1945.

105. Radg. 3861, CG USASTAF to CG 20th AF, 3 Sept. 1945.

106. See foreword, USSBS, Summary Report (Pacific War), Washington, 1946.

107. USSBS, Over-all Report (European War), Washington, 1945. A full list of the specialized reports is usually to be found as an appendix to the several published reports.

108. See foreword to USSBS report, The Effects of Atomic Bombs on Hiroshima and Nagasaki, Washington, 1946.

109. USSBS, Sum. Rpt., p. iii.

110. *Ibid.*

111. Compare the lists appended to the Transportation Division's report on The War Against Japanese Transportation, 1941–1945, Washington, 1947, pp. 143–44.

112. Published at Washington, 1 September 1946.

113. Published at Washington, 1946.

114. Published at Washington, July 1947.

115. See concluding paragraph, p. iii.

116. USSBS, Sum. Rpt., p. 26.

117. *Ibid.*, pp. 27–28. For figures on pilot training, see p. 9.

118. *Ibid.*, p. 16.

119. *Ibid.*, p. 26. In addition see special report, Japan's Struggle to End the War, Washington, 1946.

120. *Ibid.*, p. 11. In this connection, see the argument advanced in Air Campaigns of the Pacific War, pp. 53–54.

121. Ltr., Col. C. E. Combs to Brig. Gen. R. C. Candee, 28 May 1945.

122. USSBS, Strat. Air Opn. . . . VHB, p. 2, quoting JCS 742/12.

123. Arnold, *Global Mission*, pp. 564–67; Leahy, *I Was There*, p. 384; USSBS, Sum. Rpt., p. 16.

124. USSBS, Sum. Rpt., p. 16.

125. *Ibid.*; USSBS, Strat. Air Opns. . . . VHB, pp. 7–9.

126. USSBS, Sum. Rpt., p. 16; USSBS, Strat. Air Opns. . . . VHB, pp. 9–12.

127. USSBS, Sum. Rpt., pp. 16–18; USSBS, Strat. Air Opns. . . . VHB, pp. 13–16, 19.

128. USSBS, Sum. Rpt., p. 17.

129. USSBS, Strat. Air Opns. . . . VHB, pp. 7, 19–20.

130. TC 1467, Spaatz to Norstad, 7 Aug. 1945.

131. USSBS, Sum. Rpt., pp. 13–15; USSBS, The Effects of Strategic Bombing on Japan's War Economy, chap. ii.

132. USSBS, Sum. Rpt., pp. 17–18.

133. *Ibid.*, p. 19. The case is put more strongly in Jerome B. Cohen, *Japan's Economy in War and Reconstruction* (Minneapolis, 1949). The author, then a Navy officer, served with USSBS.

134. USSBS, Sum. Rpt., p. 11.

135. *Ibid.*, pp. 19–20, 29; USSBS, The Effects of Strategic Bombing on Japanese Economy, pp. 45, 64.

136. Many of these have been quoted in AC/AS, Intelligence, *Mission Accomplished: Interrogations of Japanese Industrial, Military, and Civil Leaders of World War II* (Washington, 1946).

137. USSBS, Sum. Rpt., pp. 20–21. I. L. Janis, *Air War and Emotional Stress* (New York, 1951) devotes much attention to Japan, using mostly data from USSBS reports.

138. USSBS, Sum. Rpt., p. 21; USSBS, The Effects of Bombing on Japanese Morale, chaps. iii–v.

139. USSBS, Sum. Rpt., p. 21.

140. *Ibid.*, p. 25; on morale in the two cities, see Janis, *op. cit.*, pp. 1–179.

141. USSBS, Sum. Rpt., p. 26.

142. *Ibid.*, p. 16.

143. *Mission Accomplished*, pp. 39–40.

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GLOSSARY*

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AAFPOA	Army Air Forces, Pacific Ocean Areas
AAFSWPA	Allied Air Forces, Southwest Pacific Area
AFMIDPAC	U.S. Army Forces, Middle Pacific
AFPAC	U.S. Army Forces, Pacific
AFWESPAC	U.S. Army Forces, Western Pacific
AIRNORSOLS	Aircraft Northern Solomons
AOCP	Aircraft out of commission for lack of parts
ARP	Air-raid protection
ASC/AAFPOA	Air Service Command, Army Air Forces, Pacific Ocean Areas
ASCOM	Sixth Army Service Command
ASR	Air-sea rescue
CCTF	Combat Cargo Task Force
CENPAC	Central Pacific Area
CFC	Central fire control
CINCAFPAC	Commander in Chief, Army Forces in the Pacific
ComForwardArea	Commander, Forward Area
ComMarianas	Commander, Marianas
ComSubPac	Commander, Submarines, Pacific
ER	Emergency rescue
ETA	Estimated time of arrival
IBT	India-Burma Theater
ICD	India-China Division
JTG	Joint Target Group
LUBSEC	Luzon Base Section Engineer Command
MAG	Marine Air Group
MOS	Military occupational specialty
OWI	Office of War Information
POATSC	Pacific Overseas Air Technical Service Command
POW	Prisoner of War
P/R	Photo reconnaissance
PRF	Photographic Reconnaissance Force
PT	Motor torpedo boat
RCM	Radar countermeasures
SACSEA	Supreme Allied Commander, Southeast Asia
SAP	Support aircraft party
SAW	Signal aircraft warning

* This glossary includes only abbreviations not listed in previous volumes of this series, and it omits code words for which the index provides a ready guide to definition.

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SOWESPAC	Southwest Pacific Area
StratAirPOA	Strategic Air Force, Pacific Ocean Areas
TDY	Temporary duty
T/O&E	Table of organization and equipment
UE	Unit equipment
USAF CBI	U.S. Army Forces, China-Burma-India
USAFPOA	U.S. Army Forces, Pacific Ocean Areas
USASOS	U.S. Army Services of Supply
USASTAF	U.S. Army Strategic Air Forces in the Pacific
VHB	Very heavy bomber

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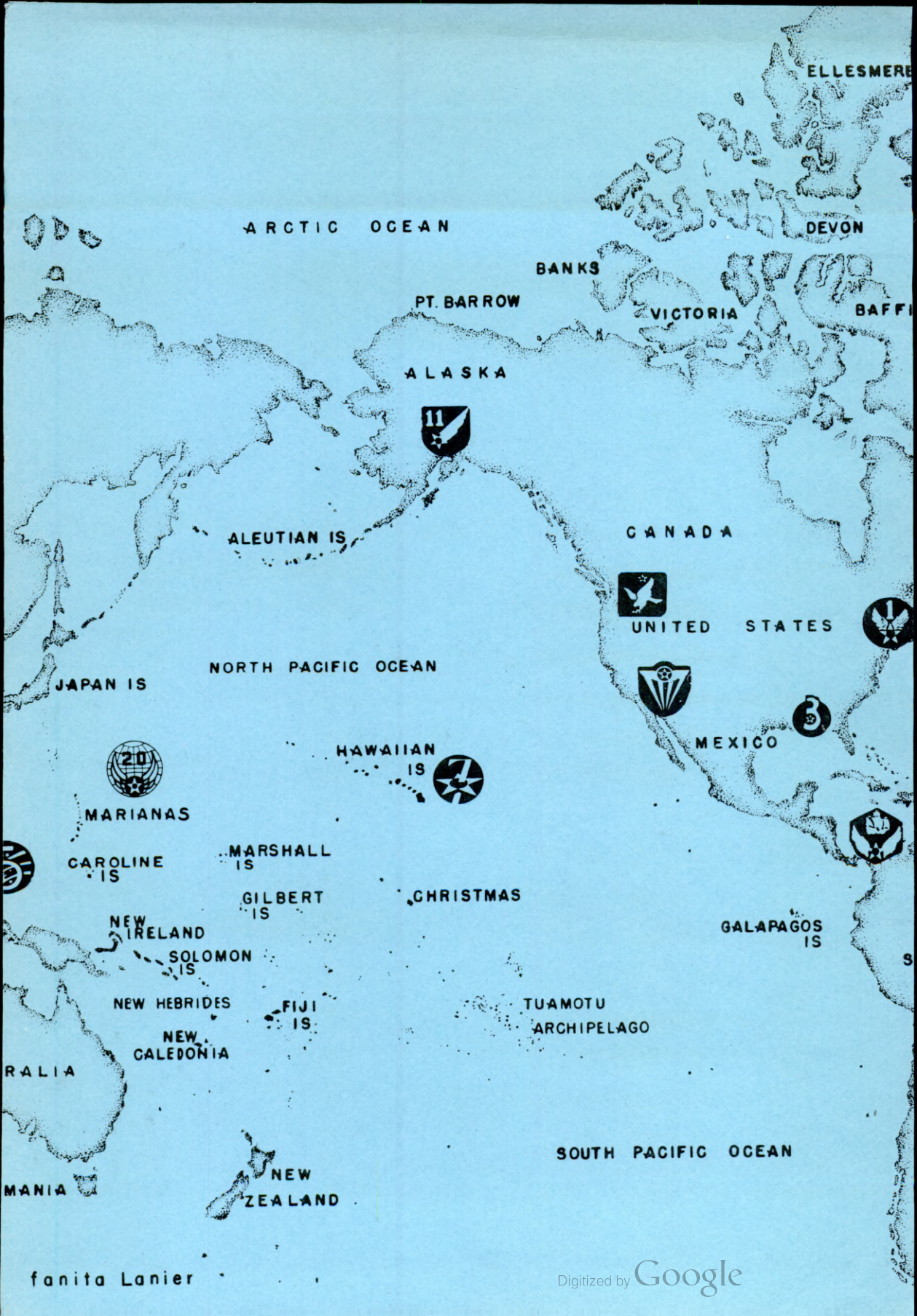

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